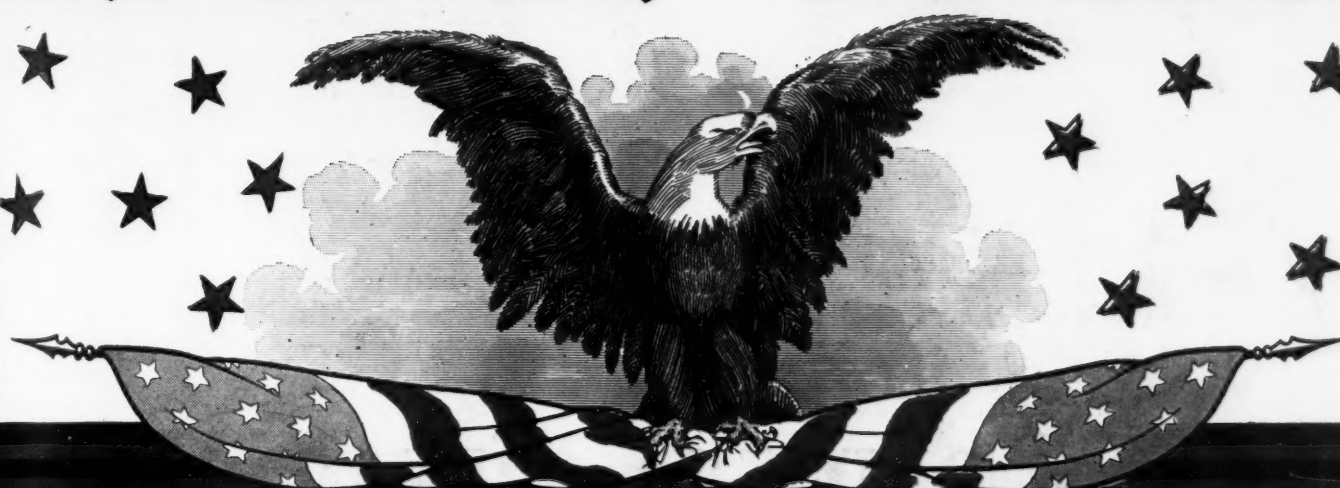


NOVEMBER 1916

AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

Can Winter Building Be Increased?

A detailed illustration of a multi-story building under construction. Scaffolding and structural elements are visible. A sign on the building reads "WILL BE READY FOR OCCUPANCY ABOUT MAY 1st". In the foreground, a vintage car is parked, and several figures are shown working on the construction site. To the right, a building with a sign that says "AMERICAN LAUNDRY" is partially visible.

Our 5th Annual Winter Work Number

Price 20 Cents



Mixes Mortar "While It's Resting"

HERE'S a WONDER (Model 20) mixing **mortar** and serving 40 men easily, running only half the time. The job is the six story addition to the big department store of Landsburg & Bros., Washington, D.C. W. J. McClure, the contractor, is enthusiastic over the *double efficiency* of the machine—mixing both concrete and mortar with equal facility. He owns three Model 15 and one Model 20.

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Your reputation depends upon it. If you adopt the methods and the mixer that this contractor and hundreds of others use, you will avoid vexatious delays—the work will be done as you want it—you'll discount rising labor costs and save penalties.

WONDER MIXERS

Are the original of their type—the only type practicable for both concrete and mortar mixing—dependable for the whole job—backed by nation-wide endorsement of builders, contractors and large engineering companies, many of whom are *standardizing* on the WONDER, because it's

"The Mixer that Makes the Money"

This cut shows Model 17 with Folding Track Loader. Note compactness for moving about. See the steep non-clogging discharge of loader bucket and equally wide mouth of easy cleaning drum. All controls handy. One lever raises and lowers bucket. Track unfolds and rests on the ground, giving great rigidity.

Built in capacities of 5 to 6, 7 to 8 and 10 to 11 cubic feet per batch; sold with or without Folding Track Loader or Auxiliary Hoist.

Find Out Now How you can test WONDER claims without obligation

Quick Delivery From nearest-to-you warehouse Write, wire or phone

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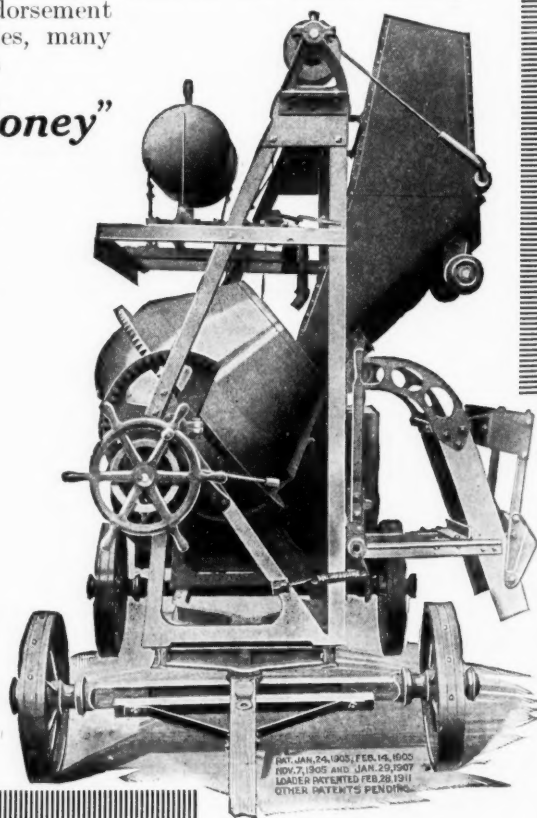
Mixers, Backfillers, Hoists, Pumps and Contractor's Equipment

New York

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

ads removed

What Are Carpenters Coming To?

A Short Talk with Our Subscribers

THERE are some very remarkable things about the carpentry trade. More than any other, it seems to develop all-around building mechanics—men who thoroly understand the building business from foundation to chimney cap.

For at least a generation, and perhaps longer, the carpentry trade has been producing general builders, concrete contractors, masonry contractors, real estate builders, and architects. They have been good ones, too—practical men, successful in every way and a credit to the building business.

In the country districts and in the smaller cities and growing towns has this been especially true. The man on whose business card and stationery appear those familiar titles of "Carpenter and Builder," or "Contractor and Builder," or "Architect and Builder," is ninety-nine times in a hundred a man who got his first training in the building world pushing the saw and the plane, and wielding the steel square.

The carpenter has always been known as "the brains of the job," and it is evident that he is also the one with the pep, the ambition, the drive to qualify for the bigger work and to push ahead into it.

Conditions in the big general building field, comprising the rural communities with its barn builders and the small cities and growing towns, are favorable to this development. The AMERICAN CARPENTER AND BUILDER is proud to have had something to do with helping so many enterprising men to work up into the ranks of the all-around builders and contractors. It is our proudest boast that this magazine has been a prod to the ambitions of so many of its readers, and a real practical help to them in their upward climb.



Brick and Concrete Work

THERE is a strong drift in many localities toward houses of brick and of Portland cement construction. The brick veneer house is a winner. Home

builders are favoring it, and you have to admit that the outside walls laid up of the modern rough texture face brick with decorative mortar joints do look mighty fine. The stud frame and sheathing guarantee a warm, dry house, and make this brick veneer type of construction more than ever proper work for the carpenter and builder.

A combination of materials is the popular thing today, making for variety. We see houses bricked up to the second story sills and stuccoed above. It is a sightly combination. We see a pretty little frame bungalow with wide board siding and a brick porch, and we set it down as a distinctive idea worth copying.

Builders and architects are getting to be very clever at scheming out these unique effects. They believe in the harmony of all the modern building materials and favor using them all, just as the job seems to require without playing favorites with any. There is no place in the modern building industry for those who are *all* for concrete, or *all* for wood, or *all* for brick, or *all* for hollow tile, or *all* for sheet metal. The modern builder, like the modern architect, knows the good qualities of all, and uses each when it will best serve the purpose at hand.

Photos Wanted

He would like to see photographs of work done by any of our readers making use of any of the above classes of building materials. Send us a picture of your best brick veneer house in course of construction, or of your men cement plastering a building, or pictures of any other part of your work that is a little out of the ordinary. We will be interested to see them, and so will your fellow builders.

Yours for variety,

Editor AMERICAN CARPENTER AND BUILDER.

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1-84 ads.

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Do you specify a spring hinge with distinctive features which will appeal to your client and assure satisfaction to all concerned?



Chicago "Relax" Spring Hinges

are in great demand. They are substantial in construction and readily applied. The EXCLUSIVE FEATURE of spring action release, allowing the door to be placed at any desired position and automatically re-engaging when the door is closed,

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Chicago Spring Butt Company,

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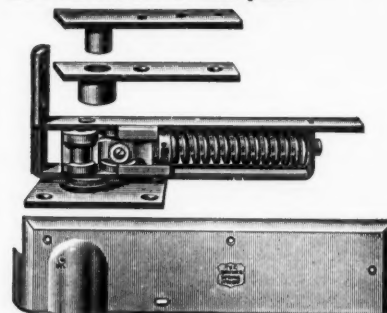


NEW YORK

BOMMER

Floor Surface Spring Hinge For Double-Acting and Single-Acting Doors Release and Holdback Ball Bearing Alignment Device

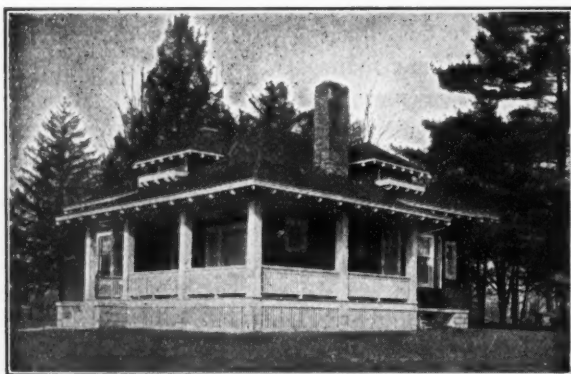
Every moving part of this hinge can be oiled from a single hole on outside of side-plate.



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side. The spring-action can also be entirely released as long as desired so that the door will swing free, without spring-action, in either direction, by inserting a wire nail (when the door is open) into a hole provided in the side plates for that purpose. The spring-action can be restored by withdrawing the nail.

Your Hardware Merchant Can Supply Them

Bommer Bros., Manufacturers Brooklyn, N.Y.



A Bungalow for Permanent Occupancy. Charles E. Anderson, designer, White Plains, N. Y. "The roof is covered with shingles dipped 10" in Cabot's Creosote Shingle Stains; the body is stained a rich brown with Cabot's Creosote Stain."

You Can Pick Out the houses that have been stained with Cabot's Creosote Shingle Stains

The colors are so soft and rich and lasting that all other stains look cheap and tawdry in comparison. They go farther, last longer, preserve the wood better and are vastly more artistic—and every gallon is guaranteed. Imitation stains smell of kerosene or benzine and are dangerously inflammable. Cabot's Stains are the genuine Creosote, wood-preserving stains, and they make the wood less inflammable.

CABOT'S QUILT

A scientific heat insulator and sound-deadener that makes houses warmer in winter and cooler in summer and deadens sound in floors and partitions. Not a mere felt or paper, but non-conducting mat that is about thirty times warmer than common papers.

You can get Cabot's Stains and Quilt all over the country. Send for samples and names of nearest agents.

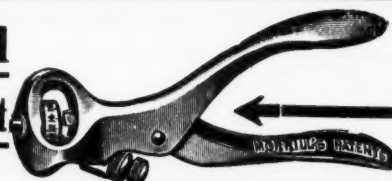
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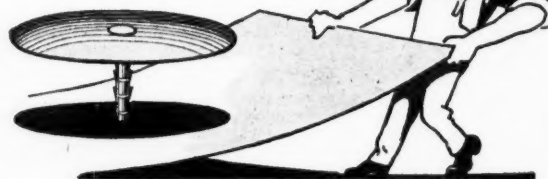
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Reg. U. S. Pat. Office

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**The
World's Greatest
Building Paper**

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Building Paper**

American Carpenter and Builder

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The publishers of the American Carpenter and Builder will not knowingly accept advertising from any individual, firm or corporation that is misleading in any way. They also reserve the right to edit advertising copy and to change or eliminate any statements that reflect or cast discredit upon any other building products.

The American Carpenter and Builder Company will use every legitimate means to safeguard the interests of its readers and its advertisers. It will use every effort to protect them from concerns whose business methods are open to question. Where the slightest doubt exists write the publishers for complete information. It may save money, time and worry.

In all cases in writing to advertisers inquirers should say: "I saw your advertisement in the American Carpenter and Builder."

VOL. XXII

November, 1916

No. 2

Can Habit be Overcome?

WHAT would it mean to your business if building activity should continue full force right thru the winter months?

Is it worth working for—to take up the slack of the next few months.

The AMERICAN CARPENTER AND BUILDER believes that by united efforts the great building industry, with all the manufacturing and supply business that depends on it, can be rescued from the class of seasonable business.

We believe it is largely habit and prejudice that put a stop to building activity during the winter, and therefore, it is merely a problem of educational advertising to overcome this prejudice and keep business up to normal. Substantial advantages both of quality and of cost can be argued in favor of winter building. It is one of those good things that benefits everyone concerned—mechanic, foreman, contractor, supply man, manufacturer, architect, owner—and harms no one.

Government Tells How to Make Wood Durable

The use of creosote for lengthening the period of service of timbers on the farm is illustrated in a small model farm which has just been installed in the Forest Products Laboratory, at Madison, Wis.

The green fields and orchards surrounding the farm are enclosed with fences supported by fence posts with well creosoted butts. Near the barn is an open tank treating plant, a desirable addition to the equipment of any farm. It consists of one or more strong tanks which may be heated either by a fire built beneath or by steam coils if a steam boiler is available. A wooden silo with creosoted staves is also shown. In the local telephone line which passes the farm the poles are creosoted from the butt to a point well above the ground line. The porch sills, steps and the timbers in the bridge across the creek have also been treated with the oil to prevent decay which occurs most readily in such damp locations where there is a poor circulation of air. Even the railroad which crosses one corner of the pasture, shows a good penetration of creosote in the cross ties on which the tracks are laid. The wood blocks with which the barn is paved also have their share of preservative treatment. The effects of creosote treatments are inconspicuous, yet add to the well-kept appearance of the buildings.

MORE WINTER



*Ways and Means
for Keeping
Construction
Going During
The Winter Months*



Can Winter Building Be Increased?

INVESTIGATION AMONG ARCHITECTS AND BUILDING SUPPLY MANUFACTURERS SHOWS GROWING SENTIMENT IN FAVOR OF A 12-MONTHS' BUILDING SEASON—ADVANTAGES AND OBSTACLES NOTED

FORCE of habit is apparently one of the strongest compelling influences. Let business take a certain trend for a few seasons and the majority of people will take it for granted that the resulting conditions are a necessity and must naturally exist.

This is the state of opinion in certain quarters at the present time in connection with the sale of building material during the fall and part of the winter season. In general building activity drops off.

While this is not a necessity, it is a fact that by taking the dull season for granted, the buyer has accustomed himself to do season buying instead of distributing his expenditures over a period of twelve months. It has been made easy for him to do his buying during a short period. Because of this concentrated expenditure he has not taken advantage of the lower prices of material and labor which exist in the winter time.

No Longer a Summer Proposition

Building is today, however, an all-year-round proposition. Comparatively few of the big builders lay up a job on account of cold weather if they can by any means induce the owner to go ahead with the plans.

Since there is no real reason for not building in the winter time, a concerted action on the part of those most vitally interested should result in increased building.

Working on this theory and already convinced of its truth, a prominent Detroit manufacturer last winter started a campaign, the object of which was to correct existing conditions in the building field as far as they relate to season buying of his product, steel windows. However, before going ahead on their theory without anything to back them up they appealed to the two classes of people in the building trade who should be most interested in seeing a movement for "More Winter Building" succeed—the architect and the other manufacturers of building material.

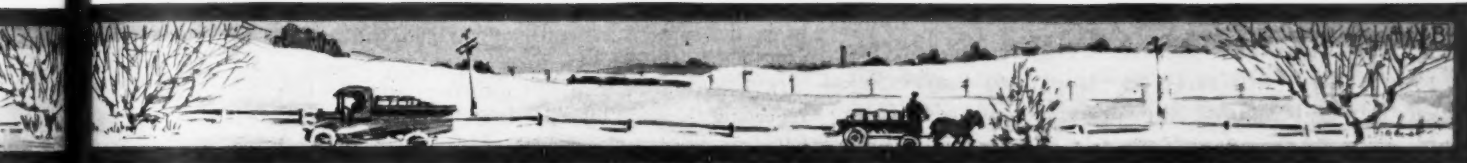
How the Architects Feel about Winter Building

The architect was first sounded—a letter being sent to a list of six thousand or more in all parts of the country. It asked their opinion of the feasibility of doing away with the "Dull Season" if conditions were made right—said conditions to be unusual inducements in the way of price, shipments and service between November 1st and April 1st; and in addition, special

"Every Season a Busy Season for BUILDERS"

WINTER BUILDING

Profitable Side Lines for Carpenters and Builders. Shop Work Helps



sales and advertising campaigns, setting forth the advantages of building in the winter time. While the replies were not all favorable there were enough favorable ones to convince one that architects are as anxious for more winter building as are building supply manufacturers.

The consensus of opinion proved the theory correct that "the winter dull season is mostly a matter of tradition," which could be overcome if everybody—architect, builder, building trades press and manufacturers work together.

With this generally favorable opinion in mind besides going ahead on their own account with an extensive advertising campaign to architects and contractors thru the influential building journals and direct to the prospective building owner thru national advertising—and to their own selling force thru a selling contest to last thruout the "dull season"—this concern next sought to interest other building materials manufacturers.

They went ahead in this way.

Co-operation of Manufacturers Sought

Substantially the proposition was the same one put up to the architects and was as follows:

1. Do you think more business could be uncovered during the next six months if supply people made special inducements in price, service, delivery, etc.?
2. Do you think that any such co-operative campaign would appeal to the building supply people generally?

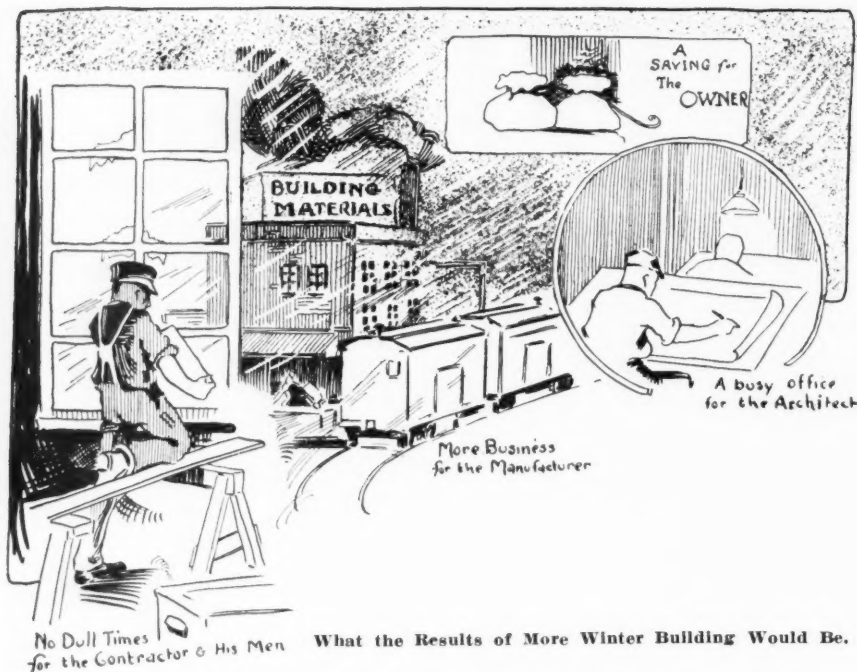
3. Would you be willing to co-operate in such a movement? If so, to what extent?

The third proposition provided for giving special advertising instructions in methods of increasing sales; every advertising department to undertake a special "More Winter Work" campaign thru their sales and advertising organizations, and to enlist the co-operation of architects and contractors.

Manufacturers Line up for Winter Building

The replies received from the manufacturers proved that everybody





What the Results of More Winter Building Would Be.

was interested. Just as in the case of the architects not all were of the opinion that building could be stimulated in the winter time, even if everybody pulled together. All of the replies were suggestive, however. A few of them will serve as samples of the reasons given for and against the practicability of winter building from the manufacturer's point of view.

A Chicago manufacturer of gypsum thinks such a movement would benefit the dealer.

"Of course," he writes, "there is no argument against the fact that it would be better to have building conducted uniformly. Anything we could do to bring about this condition would reflect, indirectly at least, to our credit, if it had only the effect of bettering conditions for our dealers."

On the other hand a cement concern in the East thinks that cold weather holds up concrete work somewhat more than some other forms of building. To quote their own words:

"We agree with you that a good deal can be done along the lines of stimulating winter work, and we are certainly going to do everything we can in that direction."

A manufacturer of asbestos sheathing paper and all materials used in the installation of heating plants, strongly indorses the idea as follows:

"Wish to assure you that we appreciate your sending your winter building proposition to us, and your suggestions have our approval. Without doubt an increase in winter building would give improved conditions to all material houses. We shall be glad to further the movement in every way possible. I think your scheme of going after architects and builders to influence them in wider activity during the winter season is an excellent one, and I want to put myself on record as being heartily in favor of your idea."

Two concerns thought it too bad that the movement for more winter business wasn't started earlier. One of them, an Ohio sheet metal concern, enthusiastically supported the movement in the following terms:

"The more we think about this proposition the more we are warmed up to the subject, and we now consider it a very happy thought to promote the idea of more winter building. It is unfortunate this subject did not come up at

least sixty days ago, so that what we want to put into the minds of the architects and contractors could have been put there somewhat earlier."

The other concern mentioned hopes for results later if the movement is pushed now. This is what they say:

"So far as possible we will fall in with your idea. We are in hearty accord with it and hope that enough effort will be put back of the campaign to carry weight. We can hardly expect much results this winter, but certainly hope for some effect later."

Others also replied favorably and promised to co-operate in the movement for more winter building.

"We will do what we can to assist in this movement, as it is an excellent one and will probably be able to obtain some results in this way," writes one.

"We are very much interested in your proposed campaign for 'More Winter Business' for building-supply people. We think that more business would be uncovered during the next few months if builders could be induced to build during the winter instead of in the spring," writes another; and still another has the same views as follows:

"We have read with interest your letter of October 12th, regarding 'More Winter Business,' and there is little question but that a properly conducted campaign directed into the right channels might release considerable business during the winter months that might otherwise hold over until spring."

Some Objections Raised

Two manufacturers while personally endorsing the plan to stimulate winter building believed the bug-a-boo that "there always had been a dull season and always would be one" was too deep seated to be overcome at this late date.



The Consensus of Opinion Proved the Theory Correct that the Winter Dull Season is Mostly a Matter of Tradition.

"The opinion seems to be here," one says, "that the bulk of small building will be held up during the cold weather, however desirable it may be to extend it."

Climatic conditions would be the stumbling block for any campaign thinks the other—"We believe it would be a distinct advantage to do away with the dull season but we do not see very well how this can be overcome entirely, on account of climatic conditions.")

And so it was all along the line. The consensus of opinion seems to be that any manufacturer entering on such a campaign would benefit the architect, contractor and owner and get out of it just about what he was willing to put into it.

Building Trade Press Favorable

Since the question of More Winter Building was originally brought up, the building trade press has devoted considerable space to discussion of different phases of the question.

Here also difference of views indicate the newness

of the proposition—personal experience under certain conditions being responsible for the position for or against the movement.

A prominent Eastern architectural magazine wrote as follows:

"We are heartily in favor of the movement which you have inaugurated for winter building. There seems to be no good or sufficient reason why building operations could not be carried forward to advantage during the winter months throughout a very large portion of the United States, and to do so would unquestionably be of some benefit to all parties concerned including architects."

So far, of course, anyone's opinion is about as good as anyone's else. Only time will tell whether or not the slack season in the building trade can be done away with. The preponderance of opinion of all the interested classes, however, indicate that even now building is not entirely a season business and as time goes on will become less and less so. This can be accomplished but it is up to the manufacturer, the architect, the contractor and the building press to do it.

The Neighborhood Craft of Locust Valley—Or How \$4,000 Was Made Last Winter

THE STORY OF HOW HALF A DOZEN CARPENTERS IN A NEW YORK RURAL COMMUNITY HAVE BUILT UP A CO-OPERATIVE HOME WORKSHOP INDUSTRY

By E. Fred Eastman

Sec'y Matinecock Neighborhood Assn., Locust Valley, L. I., N. Y.

LAST fall, winter and spring half a dozen carpenters of Locust Valley, New York, working in an old barn earned more than \$4,000 for themselves building scientific bird houses and Old English garden furniture. I have been asked to tell the story of how they did it.

Locust Valley is a small rural community of about 1,200 population on the north shore of Long Island. While we are a rural community we are not agricultural; for our nearness to New York City and the ever increasing high price of our land has been changing us gradually into a suburban or residential community. About 12 per cent of our population is made up of families of wealthy New York business men nearly all of whom have built their homes here during the last twelve years. This has brought a goodly number of carpenters among us, about 40 in all, as permanent residents. From April to November work is plentiful, but in the winter months there are often three carpenters applying for every job and pocket-books are pinched. In all of this Locust Valley is probably typical of more than a hundred villages on Long Island.

Now there is in our commu-

nity a Civic Association known as the Matinecock Neighborhood Association. It has a membership of 300 men, some rich and some poor. It has been trying to see that the business of the community is run in a businesslike way—that roads are built economically and properly maintained, that the public school is progressive, that the people have plenty of clean recreation, that the fire department is efficient, that the road sides are planted, that the swamps are drained and mosquito breeding eliminated. The writer is Secretary of this Association.

Knowing the need of the carpenters for more work



Bluebird and Flicker House Made in Two Sizes by Neighborhood Craft and Sold at \$1.25 and \$1.50 Each.



Wren House Made by Neighborhood Craft and Sold for \$1.00.



Neighbor Allen's Barn, Used as Workshop by the Half Dozen Carpenters of "The Neighborhood Craft" of Locust Valley, L. I.

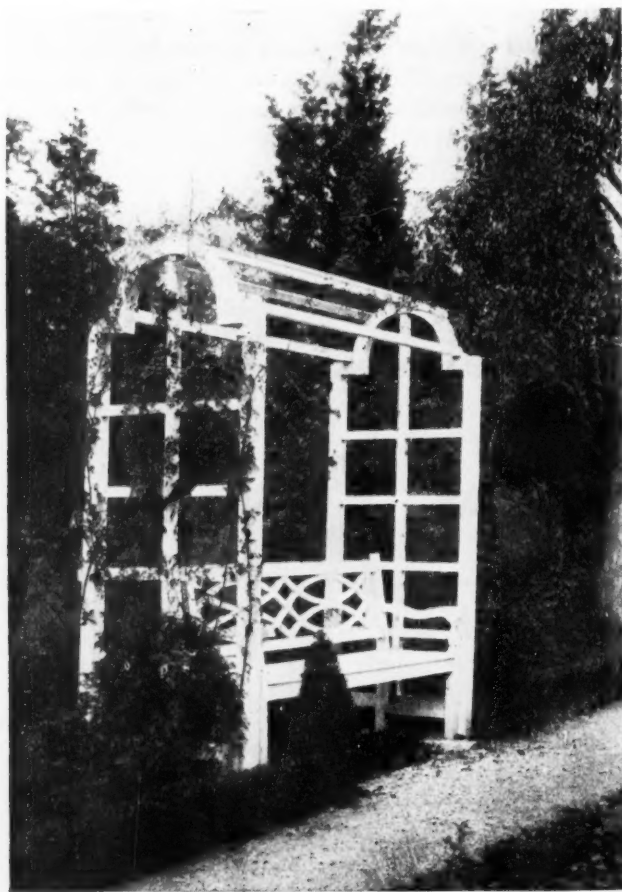
in winter and having thought out a plan which might help I called a mass meeting of all the carpenters of the village in the Fire Department room one evening in the fall of 1914 and laid before them the following plan. There were more than 1,000 wealthy men on Long Island and there was no closed season on them.

They all needed (whether they knew it or not) garden furniture and bird houses on their estates. The carpenters of Locust Valley could make bird houses and furniture as well as anyone else if they had the right designs and help in marketing their products.

I offered to provide the designs and help market the products but the carpenters must do the work, do it well, and take the risk of loss. I had secured bird house designs from the United States Department of Agriculture's Farmers' Bulletin No. 609, and garden furniture designs from friends in the neighborhood and from various photographs and cuts. I proposed that each carpenter take home one of these designs, make up a sample article from it, and bring it to the Neighborhood House for exhibition. When all the samples were accumulated I proposed to photograph them, make a small catalog of them, and invite prospective customers to the House to see them.

As orders came in they were turned over to the men who made the samples. Each carpenter would fill the orders he received in his own home workshop. The selling price of each article would be fixed by the price our competitors in other states were charging. Each carpenter would receive 80 per cent of this price out of which he would pay for labor and material, 10 per cent would be deducted for cash, and the remaining 10 per cent go to the Association to cover the cost of photographs, catalogs, postage, etc.

Of the 35 or 40 carpenters at that meeting where the plan was proposed only half a dozen had enough imagination to see anything in it, and naturally these half dozen were the best carpenters in the village. Each of these took two or three designs home, made samples and brought them to the Neighborhood House. Here they were photographed and a catalog was made and sent to all the estate owners on Long Island. For



English Rose Arch with Removable Seat; Bench 4 feet 6 inches long, and has curved seat and slanting back; painted three coats—white, light or dark green. Handmade by "The Neighborhood Craft," and priced at \$20.00 for the Arch and \$22.50 for the Bench.

this purpose \$100 was needed and was borrowed from the Neighborhood Association.

That first year \$1,100 worth of these products were sold, all of it made in the home workshops of these half dozen carpenters. Certain weaknesses in our plan, however, became apparent. First: We had no stock on hand for customers who wanted immediate delivery. Making up stock only after orders had been received and then only on overtime or rainy days gave poor service to customers. Second: Since each carpenter had to buy his own material and make it up altogether by hand without the use of machinery it was costly. Third: Lack of capital. Fourth: Half a dozen workshops gave rise to many petty little inconveniences. Fifth: 10 per cent profit was not enough to cover the cost of marketing. Sixth: Too many poor designs.

So the following fall (October, 1915) the carpenters reorganized. They called their venture "The Neighborhood Craft." From 20 business men they borrowed \$2600 capital. The carpenters themselves added \$250 to the capital fund out of their wages. They sought and obtained the gratuitous advice of architects and garden experts on better designs. They rented neighbor Allen's barn as a

IF YOU will look carefully through this catalogue, you will notice that this furniture is made in the heavy, solid, and substantial way which distinguishes the best of the English garden furniture. It is all hand work and is not to be likened to the cheap machine product which is now being turned out in large woodworking factories.

The material is carefully selected from well dried lumber; the paint is put on carefully; and, best of all, the designs have been prepared under the close personal supervision of perhaps the highest authority on garden planning and furnishing in this country.

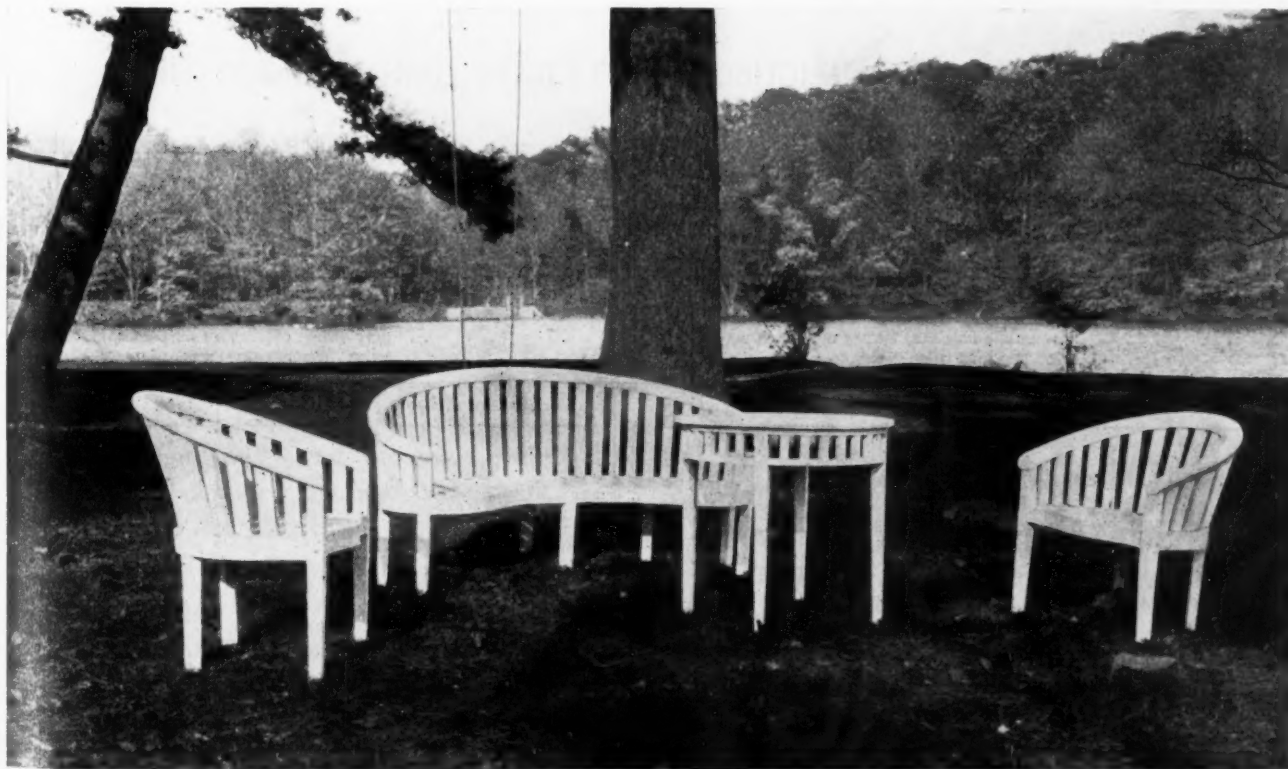
The prices are no higher than for garden furniture made in a less superior way.

As this work is done carefully and well, it takes longer than the ordinary factory product, and the directors of this village industry will be grateful, should you patronize us, if you will send your orders as early as possible, so that the work may be executed to your thorough satisfaction and to our credit.

E. FRED EASTMAN
LOCUST VALLEY, L. I.
Sec'y.

Neatly Printed Slip Enclosed with the Garden Furniture Catalog to Serve as a Personal Letter.

common workshop and installed a rip saw, band saw, and mortising machine. They abolished the piece-work basis and decided to try to pay the union wage in their shop. They elected one of their number to



Old English Garden Bench, Table and Chairs (the Johnson Design); Bench 7 feet long, painted three coats—white, light or dark green. Handmade by "The Neighborhood Craft" and priced at \$50.00 for the Bench, the Chairs \$22.50 each, and the Table \$18.00.

THE MILLS DESIGN



OUTDOOR COMFORT CHAIR

ANGLE OF SEAT DISTRIBUTES WEIGHT OF BODY FROM KNEES TO SHOULDERS.

HAND MADE.

PAINTED LIGHT OR DARK GREEN, OR STAINED.

PRICE: \$8.25.

CHILDREN'S SIZE \$7.00.

A Page from "The Neighborhood Craft" Pamphlet Illustrating Their Outdoor Comfort Chair. Note clean cut style of type and illustration used.

be foreman so that the workshop would have a head who would maintain a high standard of workmanship. The Association issued new and better catalogs. Then the carpenters went to work and thruout the winter and spring they used their capital in making up stock. A few of their products are here pictured.

Last June they held an exhibition on the grounds of the Neighborhood House. Attractively printed invitations to the exhibition were mailed broadcast over Long Island. The new catalogs were also sent out. All the influence of the Neighborhood Association was used in boosting the project in this community and others. Wealthy residents of the community agreed to recommend the Craft to their friends. Advertisements were inserted in the "Garden Magazine" and "Country Life in America." In fact every method short of violence was used to bring customers to the exhibition. Two weeks passed without a sale, and then they came. They bought. They went away. They came back and brought their friends along. The exhibition was such a success that it was made permanent on the grounds of the Neighborhood House. In all \$4800 worth of furniture and bird houses were sold this last season. About \$1500 worth remains on hand for fall customers.

* * *

That is how they did it. The scheme is not yet perfect for it is doing little better than paying expenses. To be permanent we must make our workshop and our selling organization so efficient that they will not only provide work for men who need it and turn out products of distinctive designs and workman-

ORDER BLANK FOR NEIGHBORHOOD CRAFT GARDEN FURNITURE

MR. E. FRED EASTMAN, Secretary
The Neighborhood Craft, Locust Valley, New York

Date _____ 19____

Dear Sir: Enclosed please find { check
money order } for \$_____ for which please send to

Name _____ Ad _____

the following order by { freight F. O. B.
express
automobile truck, at 8c per mile each way
I will send for them

TERMS:
Parties making payment at the time of ordering may deduct 5%. To parties of approved credit terms are 30 days from date of shipment.

NO.	ITEM	DESIGN	ANY CHANGE IN LENGTH	COLOR	PRICE	TOTAL
					TOTAL	

Name of person sending order _____ Address _____

This Order Blank was Sent with the Garden Furniture Catalog to Make it Easy to Order. It Brought Back the Business.

ORDER BLANK FOR Neighborhood Craft Bird Houses

✦

A Page from the Bird House Pamphlet Issued by the Neighborhood Craft to Help Dispose of This Line of Products.

Cold Weather Concrete Work

EVERY COMMUNITY OFFERS OPPORTUNITIES FOR INDOOR CEMENT PRODUCTS WORK—HOW TO DO OUTSIDE CONCRETE WORK IN WINTER

By S. Roland Hall

Adv. Mgr. Alpha Portland Cement Co.

CONCRETE workers were among the first to demonstrate that the building season need not end with the approach of cold weather. The costs may be increased somewhat by the precautions that must be taken against freezing, the builders who specialize in "manufactured stone" have shown how labor and equipment can be used in what was previously the slack season.

Cold-weather concrete work may be divided readily into two classes: Indoor work and outdoor work.

There are so many concrete improvements that are

and country are nowadays placing simple and sturdy gate-posts of concrete. These, too, can be made a winter product.

Concrete drain pipe is still another salable winter-made product.

Of late years a number of contractors have gone into the making of unit concrete slabs for the laying of narrow walks, which are placed on top of the ground just as cut-stone slabs would be.

Among the other subjects of winter work are concrete blocks, rollers, greenhouse benches made in parts,

culverts of a standard type made in units that fit into each other, water troughs, small tanks, etc. There is such an increasing demand for permanent improvements of this class that even those builders who have not so far taken up concrete work will do well to look into the field.

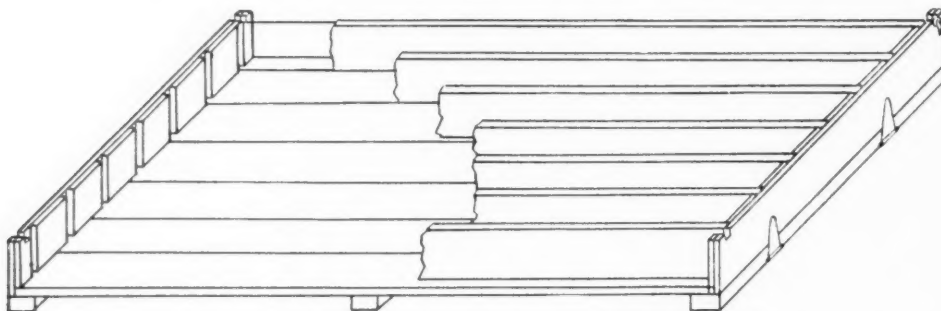


Fig. 1. Gang Mold for Concrete Fence Posts Without Taper.

of a movable type and weight and so many that may be constructed on the "unit" plan, that indoor work alone seems to afford opportunity for a live contractor to have a twelve-months' season instead of one that lasts only seven or eight months.

Some Cement Products for which there is a Ready Market

Take posts, for example: Good fence-post material, so far as wood is concerned, has become scarce or very high in price in most parts of the country. Such enduring wood as cedar and locust except in a few favored sections is out of the question. Considering

its long life, its neat appearance and the fact that fires in woods and fields will not harm concrete, the concrete post is sure to enjoy an increasing use and sale. Concrete posts can be made to better advantage indoors than out, and may be stacked outside when cured.

Many home-owners in the suburbs

for the making of concrete fence posts of the usual square type. The tapering post is somewhat neater than the square post. Figures 2 and 3 illustrate methods of reinforcing fence posts. All such concrete structures should have some reinforcement, as concrete, tho it will stand great compression, is inclined to be brittle in posts, beams, etc., unless reinforced.

It is obvious that indoor concrete work carried on in a large shop or warehouse must be given protection against cold as a freezing cold building will interfere with good work just as much as outside cold weather. The method followed by block manufacturers of having open stoves at points thruout the building, and keeping doors and windows closed, holds sufficient warmth inside.

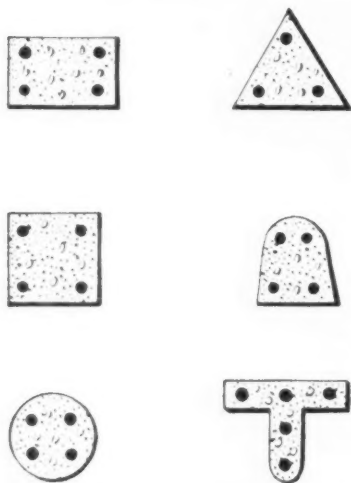


Fig. 2. Proper Position for Reinforcing Rods in Various Types of Concrete Fence Posts.

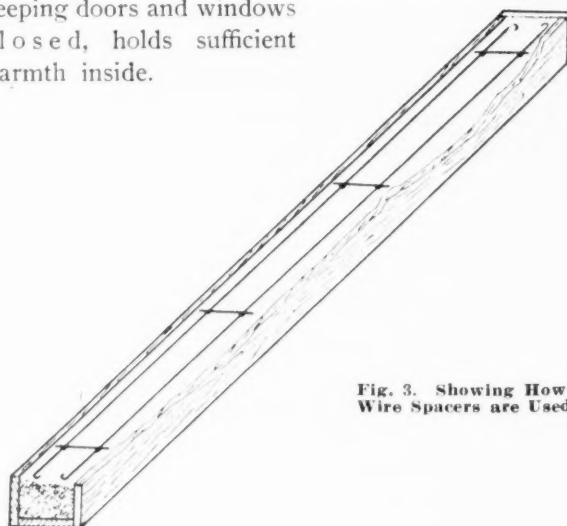


Fig. 3. Showing How Wire Spacers are Used.

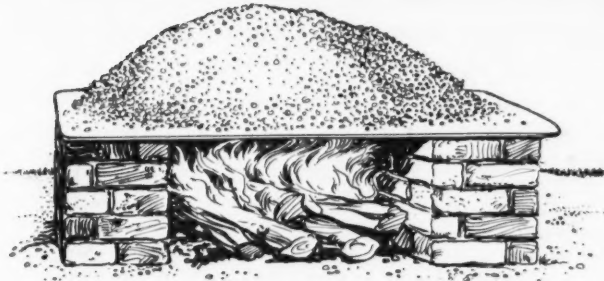


Fig. 4. Convenient Method of Heating Sand.

Outside Concrete Work

Outside cold-weather concrete work calls for more preparation. While concrete that freezes before hardening may not necessarily be ruined if, after it thaws, it is kept from again freezing, the safer plan is to prevent freezing until the job has had time to set. Freezing postpones the setting of concrete. Even mildly cold weather greatly retards the action of cement, so that in order to get concrete to set in the usual manner, steps must be taken to overcome the lower temperature.

Salt for Lowering Freezing Point

One of the common methods of doing this is to put salt into the water used in mixing the cement. Salt, however, does not add warmth to the concrete but merely lowers the freezing point of water, and is therefore limited in its usefulness. The salt-water method will not avail in weather colder than 22 deg., 10 below freezing. The theoretical rule is to add a weight of salt that corresponds to one per cent of the water for each *degree below the freezing point* that is to be counteracted, that is, 5 per cent of the weight of the water if the temperature is 5 degrees below freezing, etc. One and one-half pounds of salt to 18 gallons of water is a formula that is frequently followed. Salt is likely to cause efflorescence—a whitish discoloration—on the finished work unless a mild solution is used. Steel used for reinforcement is also likely to be rusted by the salt. However, in various kinds of concrete work these objections will not apply, and the salt method proves very useful in mildly cold weather.

Calcium chloride is sometimes used in place of salt. In general it is open to the same objections as salt is. It has one advantage over salt in that it hastens the hardening of concrete somewhat. It is not advised that a solution stronger than 4 per cent of this chemical be used.

Heating Materials and Protecting New Concrete

When the weather runs considerably below the freezing point, the plan of mixing salt or other chemicals in the water will not suffice. Heat and protection for the fresh concrete must be provided until it has had time to go thru the preliminary hardening process. This will include not only the heating of the materials but protection after the concrete has been placed.

Sand may be heated by piling the material over an iron pipe or a half cylinder set into the ground and building a fire in the pipe or cylinder. Or a flat sheet of iron may be used on a foundation as is illustrated in Fig. 4. Care should be taken not to overheat the sand, as some sands crumble if exposed to intense heat. A temperature that does not exceed 150 deg. F. will not likely be harmful. Sand may also be heated by steam, a coil of pipe being used for this purpose. Or the sand pile may be covered by a tarpaulin and steam applied by a pipe directly to the mass. Such a pipe may be connected to a boiler and a constant jet of steam applied.

Water may be heated by placing a steam coil in the water barrel or by providing a suitable tank with either a coil or a furnace fire underneath.

A method of heating while mixing, that has been used successfully, is keeping a jet of steam directed constantly into the mixer, which has flaps to hold the steam within the drum to a large extent.

Metal carriers, such as barrows or cars, will often chill fresh concrete even where the materials have been properly heated before and while mixing. This can be guarded against by dashing small quantities of gaso-

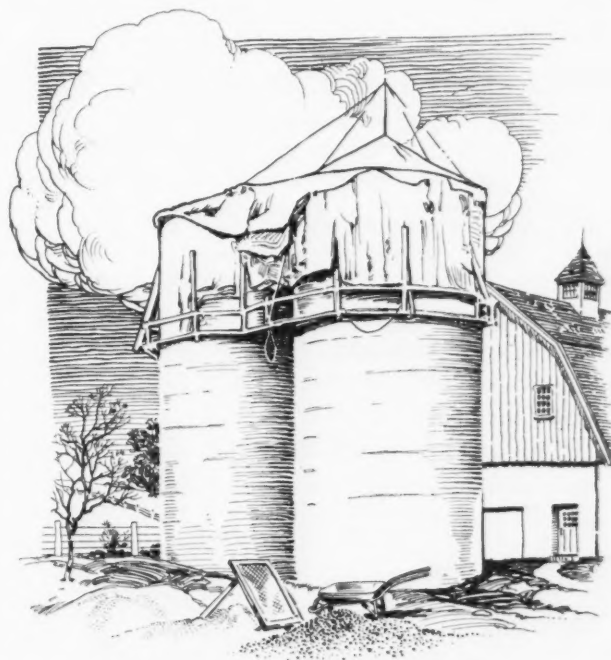


Fig. 5. Protecting Fresh Concrete with Canvas. Note Open Stove Under Flap.

line into the carriers and igniting. Or steam or hot water may be applied to remove the chill from the metal.

Stoves inside of buildings, burning coke or coal, may be used to generate warmth to protect the concrete. The openings of the building must, of course, be properly closed. All exposed work should be covered by canvas and excelsior or straw. Note Fig. 5, illustrating a method of protecting a silo job.

It is best to first lay the building paper, canvas or other covering used, putting this down on the con-

crete as soon as the freshly laid work will permit, then placing the excelsior or straw on top of this, and finally weighting this covering down so that winds will not blow it away. Such work as walks and floors are sometimes protected by means of a frame; over which is spread canvas or other covering with small open stoves inside this temporary tent.

Pointers on Cold Weather Work

The following are some cautions to be kept in mind:

The pebbles or broken stone should not contain frost or frozen lumps at the time of putting into the mixer. Thaw such material out.

As cement is a small part of the bulk and contains no appreciable amount of moisture, it need not be heated.

The concrete at the time of placing should have a temperature of from 75 to 80 degrees.

As heat passes off quickly in cold weather, the concrete should be placed as speedily as possible after the batch is ready. Metal forms and the reinforcing should be warmed by jets of steam before the batch is placed. If there is delay, see that previous concrete is covered until the work can be resumed.

Contractors must not expect that concrete placed in cold weather will harden as quickly as in warm weather,

no matter what care may be taken. Even when not frozen, concrete placed in cold weather will frequently be a long time in setting. Jobs that were thought to be failures have turned out to be all right when forms have been allowed to remain in place. Frozen concrete looks much like set concrete, and this has sometimes caused contractors to take down their forms and ruin the job. When struck with a hammer frozen concrete will ring like a set job. The only safe test is to pour hot water on a spot or to apply a plumber's torch. If the mass is merely frozen, either of these treatments will soften the surface.

It is not advisable to lay such concrete as sidewalks, driveways, etc., when the ground contains frost.

Protection should be continued in severe weather for at least five days and forms allowed to remain longer—until it is certain that the job is firmly set. It is obvious that plain mass work such as retaining walls, abutments, etc., will not require the same care as thin walls, columns, beams, etc.

An association of leading Portland Cement manufacturers maintains a large service department at Chicago from which builders can obtain a great deal of valuable data free of charge, bearing on cold-weather concreting as well as on the usual forms of concrete construction.

This Business is Best When Building is Quietest

TRUE STORY OF A TYPICAL SUCCESS AGAINST GREAT ODDS IN THE CEMENT PRODUCTS FIELD—HOW THE BURIAL VAULT BUSINESS GROWS

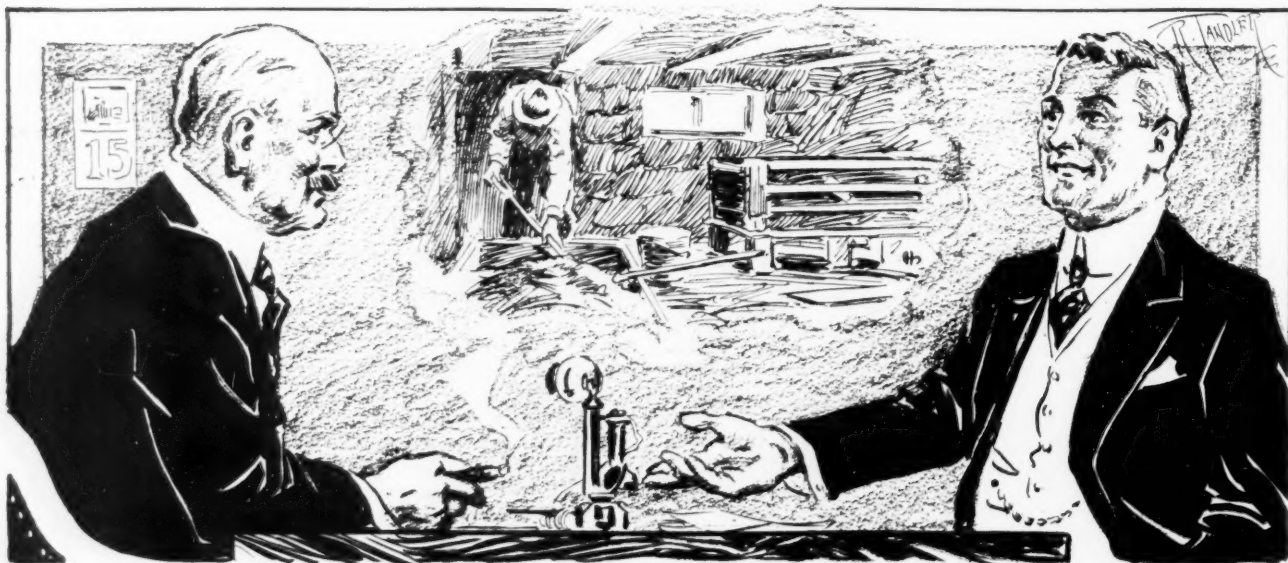
By John H. Cox

IT was in the summer of 1912 that our good friend Washburn located in Hudson, N. Y., decided to enter the cement burial vault business. At that time he was making a bare living by putting in cement fence posts and sidewalks. Times were pretty hard and in his case were just ripe for a new venture.

About the middle of that year he ran across the concert burial vault proposition, and after an investi-

gation, which was very careful, indeed, because he did not have any money to throw away, he arranged to take it on for his locality and was given the privilege of paying for it over a period of about two years.

Notwithstanding the fact that cement vaults have been made ever since the time of the Pharaohs, whose mummies are frequently recovered from them, and that scores of different cement vaults have been started



Washburn Told of His Fight Against Discouraging Conditions and for Ultimate Success.

since the Civil War, Mr. Washburn was actually beginning, so far as any popular knowledge of his product was concerned, on a brand new enterprise. What that means you readers are best able to judge.

It was well that he was not a man with the faintest streak of yellow. On the contrary, once having closed his jaws on the proposition there was no let go until he came thru to final success. The first year was extraordinarily discouraging. As he sat in my office a couple of months ago—a big strapping six-footer; two hundred and fifty pounds weight of full, red-blooded man, togged out in the best clothes money could buy, with all the visible signs of prosperity—and told me of his earlier experiences, I could not restrain my expressions of admiration for his notable fight against conditions and for ultimate success.

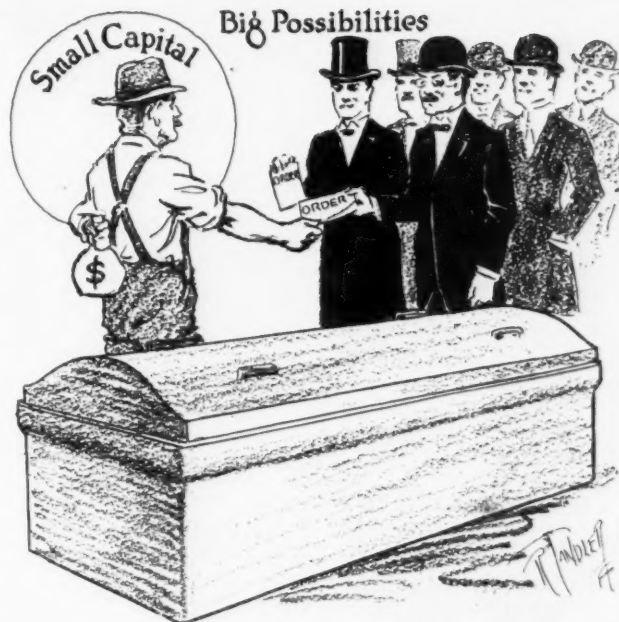
Said he: "I took my mold in July, 1912, and installed it in the cellar of an abandoned brewery whose vaulted ceiling scarcely allowed me breathing room. I could not stand up straight anywhere in the place. Nights, holidays and every spare moment I had I spent making vaults. But I had to live and did so with odd jobs in concrete work, and they were pretty scarce.

"I put lots of energy and good hard work into making vaults and prided myself on turning out as good a cement vault as could possibly be made. From time to time I got out to see the undertakers and occasionally did some small advertising in the newspapers. I sold just one vault up to January 1, 1913. My wife was intensely discouraged, but I had the thing; knew it had big possibilities and was thoroly determined to make it go.

"In 1913, still doing all of the work myself at odd times, put in thirty-four, and in 1914, sixty-seven vaults. My faith in the project had never let go and by the end of that year I realized more than ever its possibilities. So that I began to look around for ways to enlarge the scope of my work and finally concluded to erect my own plant, increase my equipment and territory and go after the business in a much bigger way."

This is exactly what Mr. Washburn did. For in January, 1915, he purchased additional molds and territory equal to what he had before and for the year 1915 placed in the ground some ninety vaults. By this time his plant required more help, so that he discarded all other work, took on another man, and both spent all of their time at the vault business alone. His most recent letter to us containing his report I wish I could show to every man who is interested in something out of which to develop either a prosperous side line to a business already going or who is looking for something to develop into a permanent, exclusive business.

On this report Mr. Washburn tells us that up to July 1, 1916, he had placed eighty-one vaults; that on that date he had some thirty-three in stock; that he had paid all his labor, overhead expense and his own



Capital Invested and Equipment Required are Small Compared to Business Possibilities.

salary and had in the bank from the vault business alone a clean \$1000. Since the last six months of the year are the best, what his record will be by December 31st is interesting to conjecture.

What Others are Doing

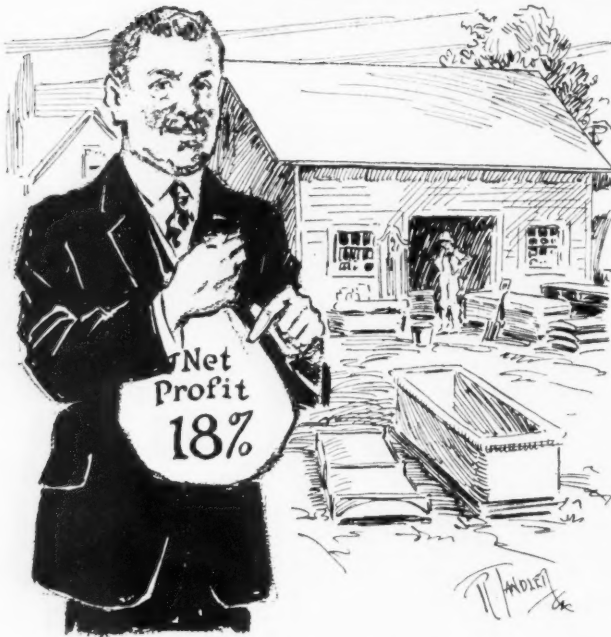
But this, as said before, is a typical case. Lying on my desk this morning I have scores of reports from vault makers which cover the experiences of men in the business but a few months; of men in the business a year or two; and of men who have been in it for six or seven years. These present a vast amount of information and would make a mighty interesting story if it were made up from a composite outline taken from the entire lot of reports.

There is the man who started in 1912 and today writes that his vault has practically driven all others out of the field in Philadelphia; there is another one who took six months to get a start, but who in two years doubled his equipment; there is the man who having placed ninety-seven for the first half of the year says, "I can unhesitatingly say that this vault business is more productive of profit than any other line I have."

In the case described the man developed the business until it pushed out of existence everything else that he did. In other cases, such as that of our friend in Columbus, Georgia; or in Hamilton, Ohio; or in Boston; or in Newport, Delaware; or in Charlotte, North Carolina, the vault business has been and is yet but a part of a much bigger organization. It is used in these cases and in others by the score as a side line pure and simple.

Vault Demand Greatest in Winter

The sale of vaults is of course largest from October 15th to May 15th, i. e., in the wet weather. This period coincides with the time when builders, carpen-



On the Average the Vault Man Clears About 18 Per Cent when Working the Business as a Side Line.

ters, cement products plants and others have about finished up their outside work and are in need of something really worth while to engage their attention during the "indoor months." For instance, in our own local plant we will run but two or three sales during June, July and August, but from September on through the winter they will jump to eleven, seventeen and up to about one a day.

More and more thru ever increasing publicity the public is coming to realize the vast foolishness of squandering large sums on beautiful tributes that are to be laid away in the ground without protection and thus soon to be destroyed. The country over, the concrete burial vault is rapidly assuming pre-eminence in the burial vault field. So much is this true that undertakers, particularly in the big cities who have reputations to maintain, will hardly conduct a first-class funeral without using the vault.

Out of the Experiment Class

So that the proposition of the concrete vault is now no longer a theory or an experiment. For eight years it has been proving its worth and its development is more rapid than ever before. Once established it is a business not affected by hard times. A business that can be opened up and shut down according to the requirements of the rest of the plant or according to the state of sales and collections.

The equipment required is neither big nor expensive. Any fair sized carpenter and builder with a shop of his own can soon convert a part of it into a vault factory, as our friend Petrie at Bloomington, Ill., has done. Used then as an adjunct to the regular business, its growth, of course, depending on the amount of time and energy put into it, it has paid and will pay extraordinary dividends.

As a matter of fact from all the experiences that we have been able to accumulate, and they run up into the hundreds, we believe that with a fair amount of equipment and a relatively small capital invested any man with a good concrete vault as his time filler when building operations are dull can increase the net profit he is earning now by about 18 per cent, i. e., a man who is now making 6 per cent on his capital should with the vault clear not less than 24 per cent. Or a man who is making 20 per cent should clear not less than 38 per cent. These figures are conservative rather than otherwise and are based on scores of reports from men whose sales of vaults run from fifteen or twenty a year up into the hundreds.

A Business for Big Men as Well as Small

The case chosen for an example is of course that of an individual who did not even have a plant or a developed business at his disposal. It would be even more easy to cite the cases of those who did have those advantages—men who long before they ever heard of the vault were engaged in prosperous building affairs. The one that recurs most often to mind is W. M. Camp, at Columbus, Ga.

I would like nothing better than to tell you how he began eight years ago by adding the vault business to an already big, prosperous, profitable construction work; how he built it up in one of the most unfertile territories in the land; how he now handles upwards of three hundred vaults a year; and how he has in the past five years not only increased his own equipment and territory but has been so friendly as to locate for us half a dozen other big men.

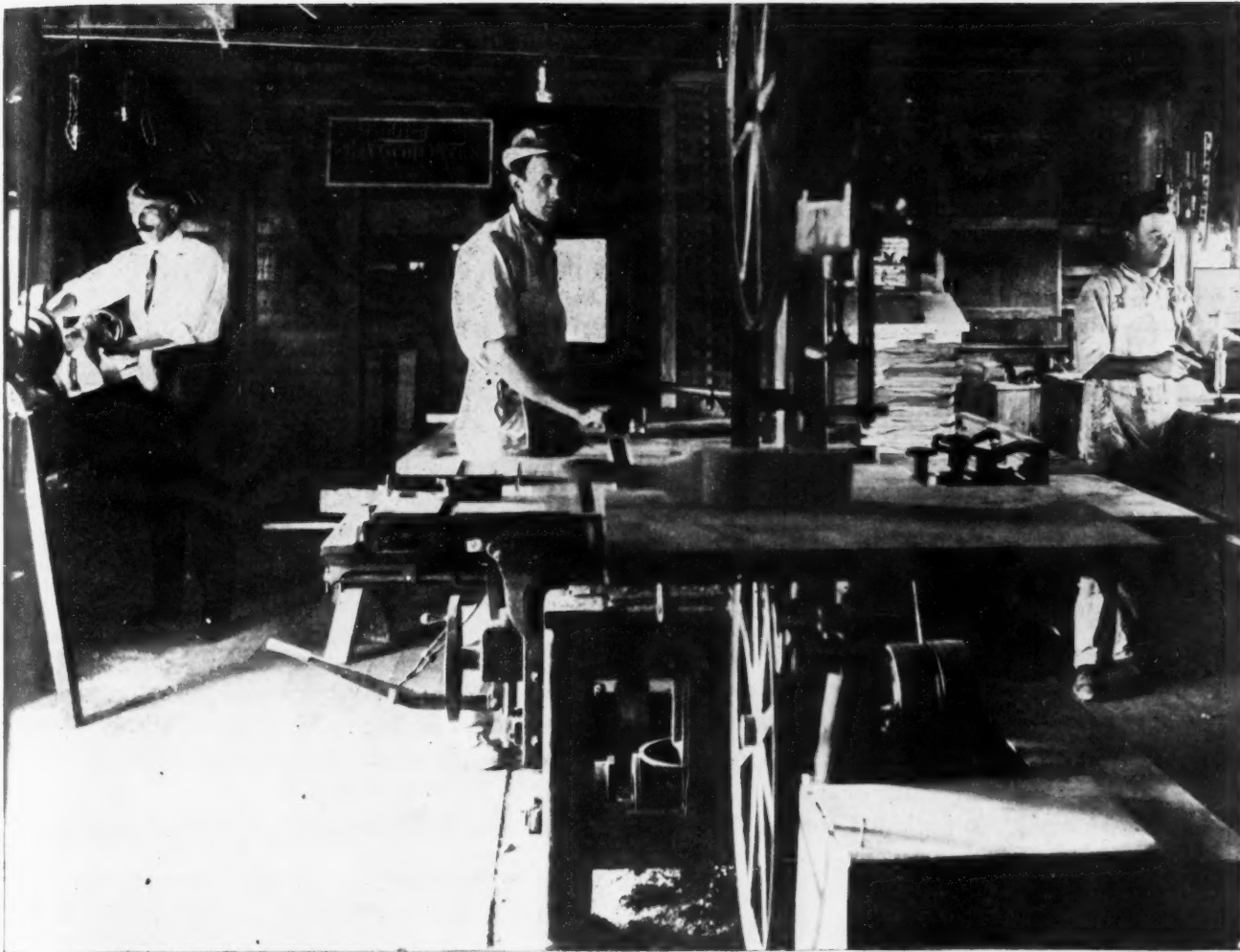
Plugging Wins Out

In closing I would like to emphasize the point that far and away above everything else the vault business is a seasonal one and its line of growth in sales starts where as a general rule building operations stop and goes on increasing in height up to the point where building operations begin. In other words, the worst period of the year for carpenters and builders is five times as good in the vault business as the season in which carpenters and builders do practically all of their regular work.

And last but not least a man can take it alone and build up to success or a business already established can add it as a side line with tremendous advantage. But in either case there are two definite facts to consider.

First. The capital invested and the equipment required are disproportionately small to the business possibilities in it.

Second. Whatever its possibilities are they depend on good, honest, thoughtful, hard-headed endeavor, commonly known as plugging. It takes time; it takes energy; it takes a little capital, and it takes obstinate determination never to let go to realize all of the possibilities there are in it.



Herbst Bros. Power Carpenter Shop

THE WORK IT DOES DURING THE WINTER SEASON—HOW IT IS EQUIPPED AND ARRANGED.

OUR shop was first equipped for the manufacture of all common mill work such as window and door frames, sash, cupboard doors and fronts, colonnade bases, odd size doors and all other such material to be furnished on houses and barns.

We utilize all rainy days and spare time in the shop, having work for at least three men most of the time.

We later added one lathe to this other equipment, making a very complete equipment of one No. 30 and 31 "Famous" universal wood worker, with 16-in. jointer, 32-in. band saw, boring machine, hollow chisel mortiser, tenoner, panel raiser, dado heads, rip and cutoff saws, etc., and one 14-in. "Famous" lathe with 6 ft. bed.

We have two motors, one for each machine, which greatly reduces the cost of our power bills.

During the winter months we do quite a variety of work in our shop. We make all kinds of wood novelties, porch and lawn furniture, hand made furniture for the house and even automobile bodies. We also have lots of furniture repair work in the winter. We also do some pattern work along with our other work.

By taking on the different kinds of wood work this

way we are able to keep ourselves busy all winter and have a little income also.

We make a great many screen doors and screen windows, in the spring.

We figure we have made no mistake in adding this equipment to our business for there is no end to the good uses we can put it to and save money and lots of time.

We always get our frames and sash when we want them and if we don't we know whom to blame for it.

The size and arrangement of our shop may interest some readers also.

Our building is 52 ft. by 18 ft. divided into three parts; the main room in the rear which is 36 x 18 ft., containing the machinery, and one room 12 x 16, for a paint room, and one 6 x 16 for an office. We have plenty of light around our benches both for day and night work.

Our lumber and storage shed is on the rear of the shop.

We hope this bit of a description may do at least some one some good.

HERBST BROS., General Contractors.

A Woodworking Shop on Wheels

DETAILS OF UNIQUE HOMEMADE POWER EQUIPMENT AND HOW IT IS USED ON THE JOB

By J. F. Brown

Architect and Builder, Brookfield, Mo.

I AM sending you three views of my power machine on the job. This machine is on the job and is mounted on a truck. It is all enclosed so as to make it storm proof, which also provides a place to lock up our tools. It is equipped with a 2-hp. Fairbanks-Morse gas engine. It has a rip saw, plow, rabbet, dado, planer, 18-inch sand paper drum, and swing cut-off saw. The cut-off table is provided with a frame roller attachment so that the material that is to be cut may be rolled along with ease. The cut-off table also answers as a bench.

This machine was designed and built by myself. There are a great many machines on the market, but I believe I have the only one of this pattern. It is a power shop on wheels, and I can do almost everything in the way of framing, cutting and smoothing on this machine.

I also have a 4-hp. gas engine in the shop, and five machines. I had the photographer take a picture of the shop, but he made a failure of it. I am sending you a view of a bungalow which I am building. My

power machine and auto you will see are just to the rear of the building. This building was designed and drawn by myself, as that is a part of my business. I have marked myself X so you may know I am on the job.

I have taken the AMERICAN CARPENTER AND BUILDER for several years and find it a great help to me in my business.

J. F. BROWN.



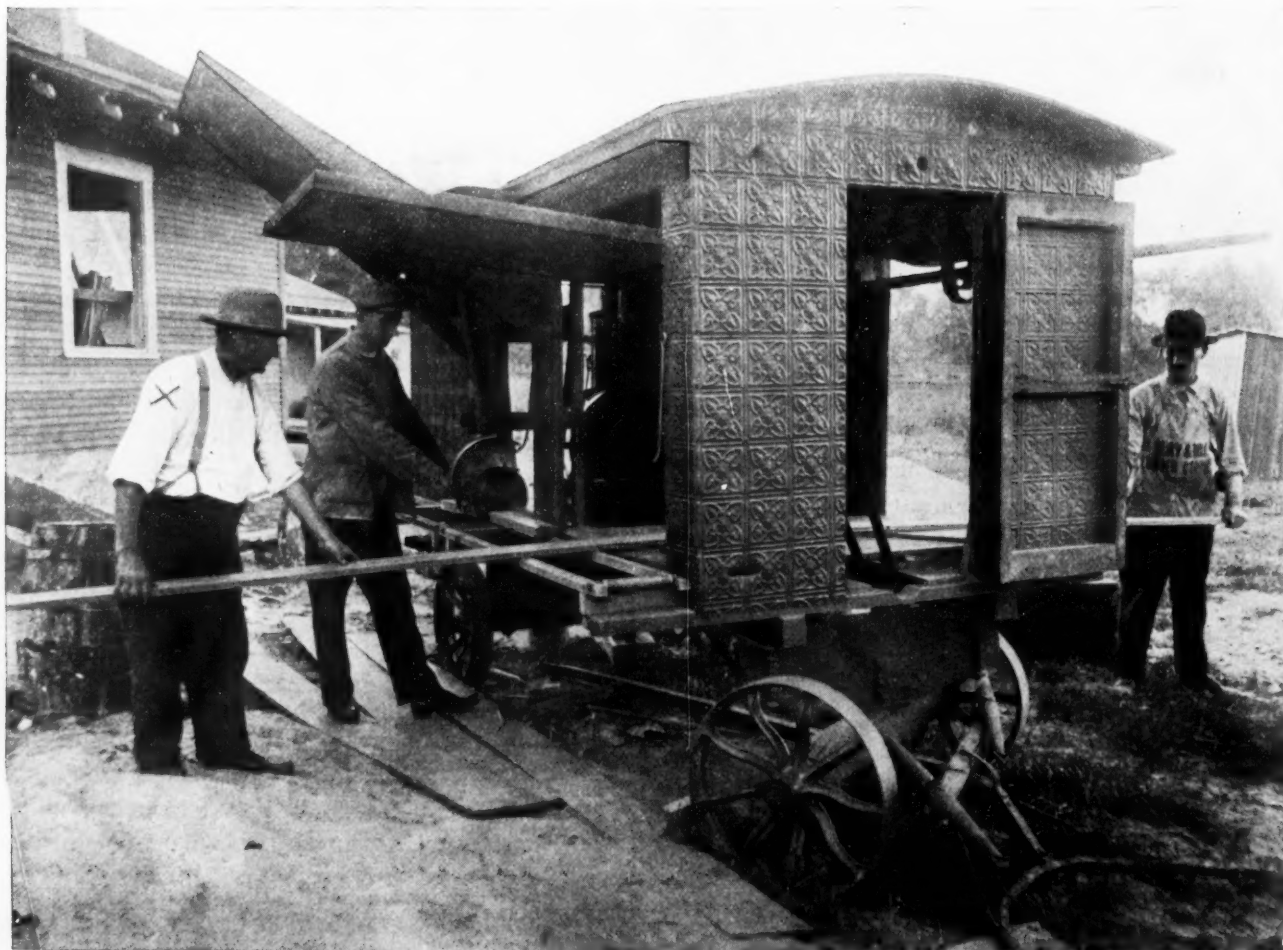
Steel Ceilings Offer Attractive Opportunity

By R. M. Nicholson

OUR daily lives are all governed, more or less, by habit. And when you stop to analyze the building situation, isn't it a habit that activities are allowed to lull during the winter months?

True, there are many extremely cold and snowy days on which outside work would not be possible, but think of the great majority of pleasant days that go to waste simply because this precedent has been established.

Assuming that contractors and builders will see the



J. F. Brown, of Brookfield, Mo., and Two of His Men Busy on His House-Inclosed Portable Woodworker.



A Typical Bungalow Building Scene from Contractor Brown (by the Ladder) and His Power Equipment (in Background at Right).

logic of this argument, the question naturally arises as to the best means of utilizing the off days to profitable advantage. There are many ways, one of them being the installing of steel ceilings. They furnish work that is in harmony with building practice and can be easily handled by carpenters.

Steel ceilings really offer the contractor or builder a double profit—one from selling the ceiling itself and the other from erecting it. Naturally, then, it is a good line to handle.

There are many plaster ceilings in stores, homes, and buildings of all kinds that are in bad shape. By showing the owner that you could install, at reasonable cost, an attractive, fire-resisting, non-collapsible and permanent steel ceiling right over the old plaster ceiling thus eliminating the usual "muss" of replastering, enough business can be contracted for to make the effort worth while.

And, of course, steel ceilings can be erected in your new buildings throughout the year.

Steel ceilings have many advantages and are growing more and more popular among building owners.

This suggestion is worth following and anyone following it will not only keep busy but be well remunerated for his efforts.

Any of the steel ceiling companies advertising in this magazine will give you full particulars regarding their product.



Driving Nails by Air

The old method of driving large nails and spikes by hand is doomed. The hand method is too expensive, too laborious, too ancient. No engineer, for example, would now-a-days undertake to drive a pile by hand, although it certainly can be done. It would be too expensive.

Contractors on big jobs are beginning to use air hammers for driving spikes and nails. By that means they are driven home in a jiffy.

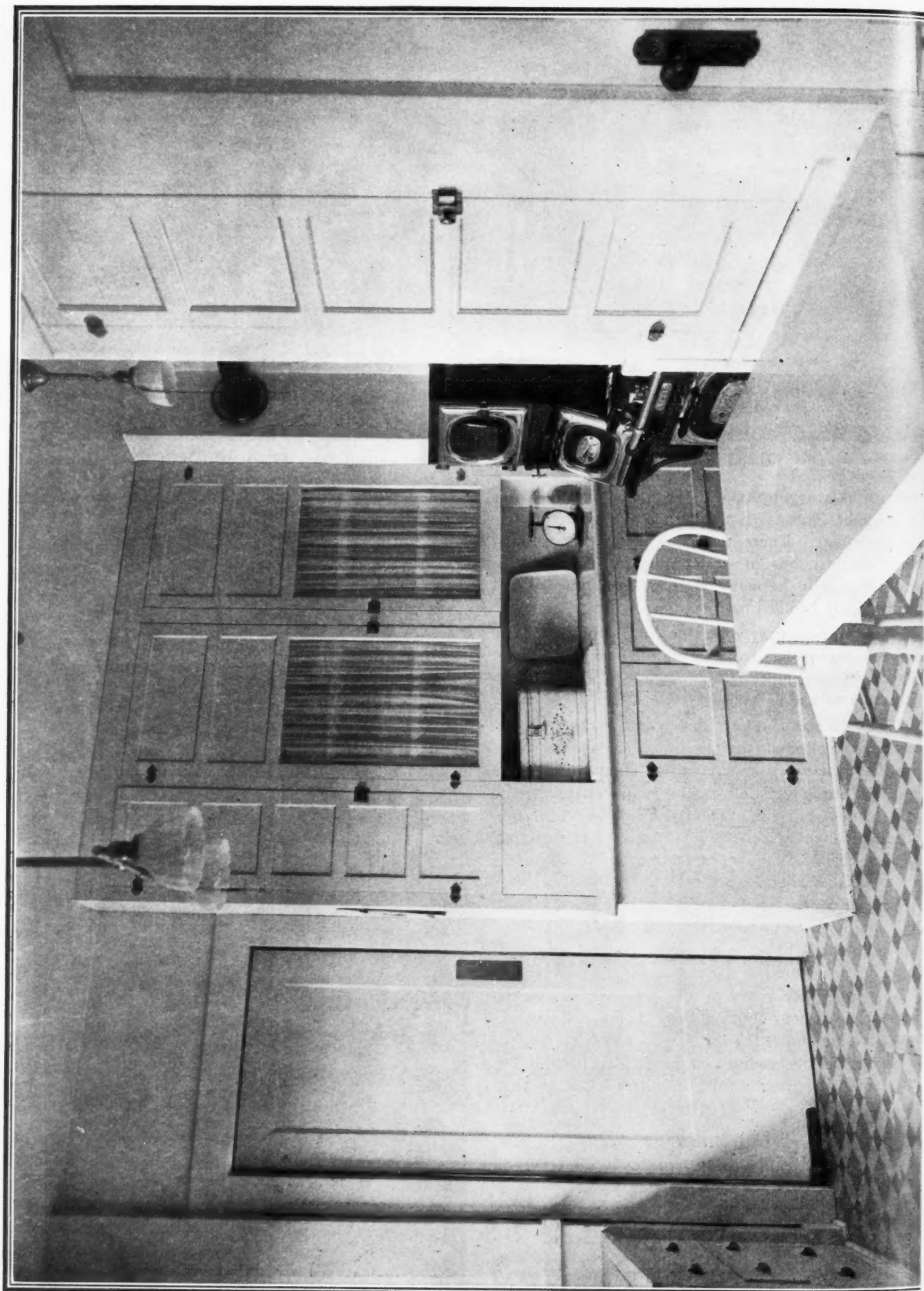
Manufacturers are meeting this new demand by making air drilling machinery, riveting machinery, etc., convertible. New equipment is therefore not needed to accomplish the above new kind of work.

Who knows but that carpenters will some day cease using the old familiar claw hammer. All of these things are in the range of possibility.

N. G. Near.



Inside the Brown Portable Power Shop.



Where Cleanliness Is Queen—the Modern White Enameled Kitchen with Its Abundant Light, Its Built-in Wall Cupboards and Chests of Drawers, and Its Sanitary Linoleum Floor Covering.



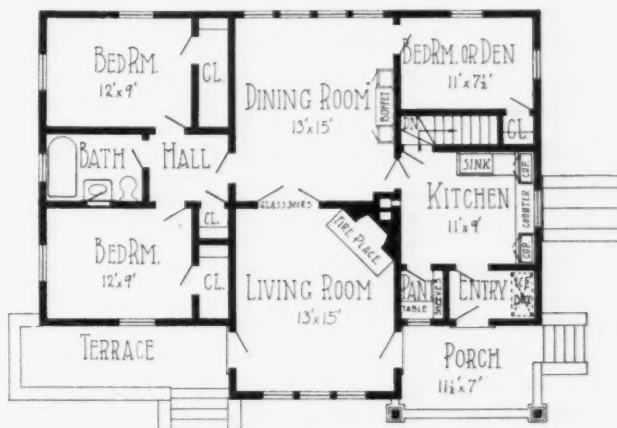
Bungalow with Special Room Arrangement

The bungalow shown here is built around the living room and dining room these two rooms being considered the most used and the most noticeable rooms in the average house. In this case the rooms are made the same size and are placed one behind the other with glass doors between. At the front of the living room there is a door on either side, one leading to the terrace and the other to the porch. The fireplace is built into the corner of this room where it forms an attractive feature and permits the use of a single chimney with two flues to serve the furnace, fireplace and kitchen range.

The kitchen has been given considerable attention. A counter is placed beneath the window and two cupboards are provided. The sink is handy to the counter. A little pantry adds to the convenience of the arrangement. There are shelves and a table in this pantry. An entry from the porch furnishes plenty of room for the refrigerator.

Two bedrooms and the bath are placed on the other side

of the central rooms and a third bedroom, which may be used as a den, occupies the space in the remaining corner of the house.



Floor Plan of Bungalow. Size 41 feet by 31 feet 6 inches.



Comfortable Six-room Bungalow. Size, 41 feet by 31 feet 6 inches. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$7.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6848.



Well arranged Bungalow of Five Rooms. Size, 30 feet by 41 feet. We can furnish complete set of blue-printed working plans and typewritten specifications for only \$7.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections, and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6852.

Bungalow with Unique Exterior

Among the class of houses which depend upon the combination of different materials for their exterior finish, this little bungalow is somewhat different from the ordinary. The finishing materials used in this case are shingles and stucco on the walls of the house and ornamental brick and stucco in the chimney. The method of proportioning the different materials over the walls is distinctive. The stucco is applied in a wide belt around the house in line with the main floor windows. Beginning at the top of this belt and carried down to the water table, the chimney is finished with stucco. Above the belt the ornamental face brick are used in the chimney.

This chief decorative effect, altho very artistic in itself, is greatly aided by the various smaller details of exterior finish carried thru the design. Because shingles look best for wall finish when they are stained some dark tint, the preferable color scheme for this bungalow would probably be found in the use of dark stained shingles, gray stucco and pure white trim. The moulding used at the junction of the shingles and stucco is carried across the porch, around the chimney and along the top edge of the flower box built under the large front window. The decoration of the porch columns, altho very simple, is effective. The roof, of low pitch type, is sufficiently elaborate to harmonize with other parts of the design. On the extended end of the porch a pergola roof is carried out under the eaves of

the main roof and three-column supports are used at each corner.

The room arrangement affords every convenience that could be desired in a five-room bungalow. A hall thru the center of the house from the front door to the bath room makes it possible to enter any room but the pantry from the outside without going thru other rooms. The basement and attic are also reached from this hall.

The living room is a square room along the side wall of which a brick fireplace and two bookcases are built

The cased entrance from the hall is near one corner of the room. This is an advantage from the standpoint of interior decoration because the corner entrance does not break up the wall space where it may be used for pictures and other purposes. The arrangement of furniture in a living room of this kind is also aided by the greater clear floor space available. For instance, in this particular case the corner of the living room opposite the fireplace offers a large unobstructed space for some large piece of furniture such as an piano or a davenport.

The dining room is across the hall from the living room. In this room, which is made slightly longer than it is wide—a convenience when the table is extended to accommodate guests—all projecting corners are eliminated. The china closet is built into the wall with its doors flush, thus taking no space in the dining room. Back from this room is the pantry and kitchen. The arrangement is very convenient and the pantry is well fitted with cupboard, shelves and table to save steps for the housewife.

There are two bedrooms, each of which has two windows and a closet. A linen case in the hall is handy to both of these rooms.

A feature which will be greatly appreciated is one which is readily observed in the perspective shown above. This bungalow is built well up above grade so that large basement windows may be utilized to produce in the basement a really usable part of the house.



Floor Plan. Size 30 feet by 41 feet.

Large Family House of Stucco

In this design the walls of the house proper are finished with stucco, while the sun parlor, porch, chimney and foundation wall above grade are built of brick. In a house of this size the combination of brick and stucco is striking. The color and texture of the brick surfaces may be selected with the object of producing the effect which is most pleasing to the owner and the stucco is capable of various treatments to bring out this effect. In the perspective below an idea is given of the beauty of this design when light gray stucco is used with a rough texture, mottled brick, wood trim being finished white and window sash dark green.

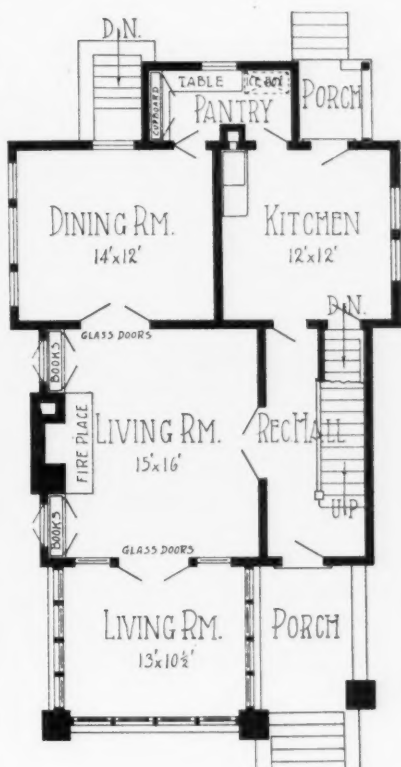
The rooms are arranged in a very pleasing manner. In the large reception hall an open staircase is built. Double doors lead off to the living rooms. In the main living room a brick fireplace and two bookcases are the most attractive features. Glass doors having an ornamental window on each side are placed between the main living room and the sun parlor. These two rooms give the house a splendid basis upon which a model home may be founded.

The dining room and kitchen are connected by a pantry built out from the rear wall of the house between these

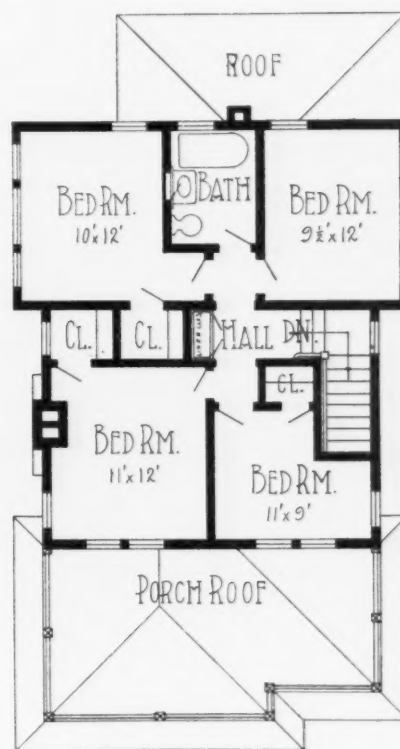
two rooms. The arrangement is very convenient.

Four bedrooms and a bath are pro-

vided for on the second floor. Every room is well lighted, of good size and full height.



First Floor Plan.

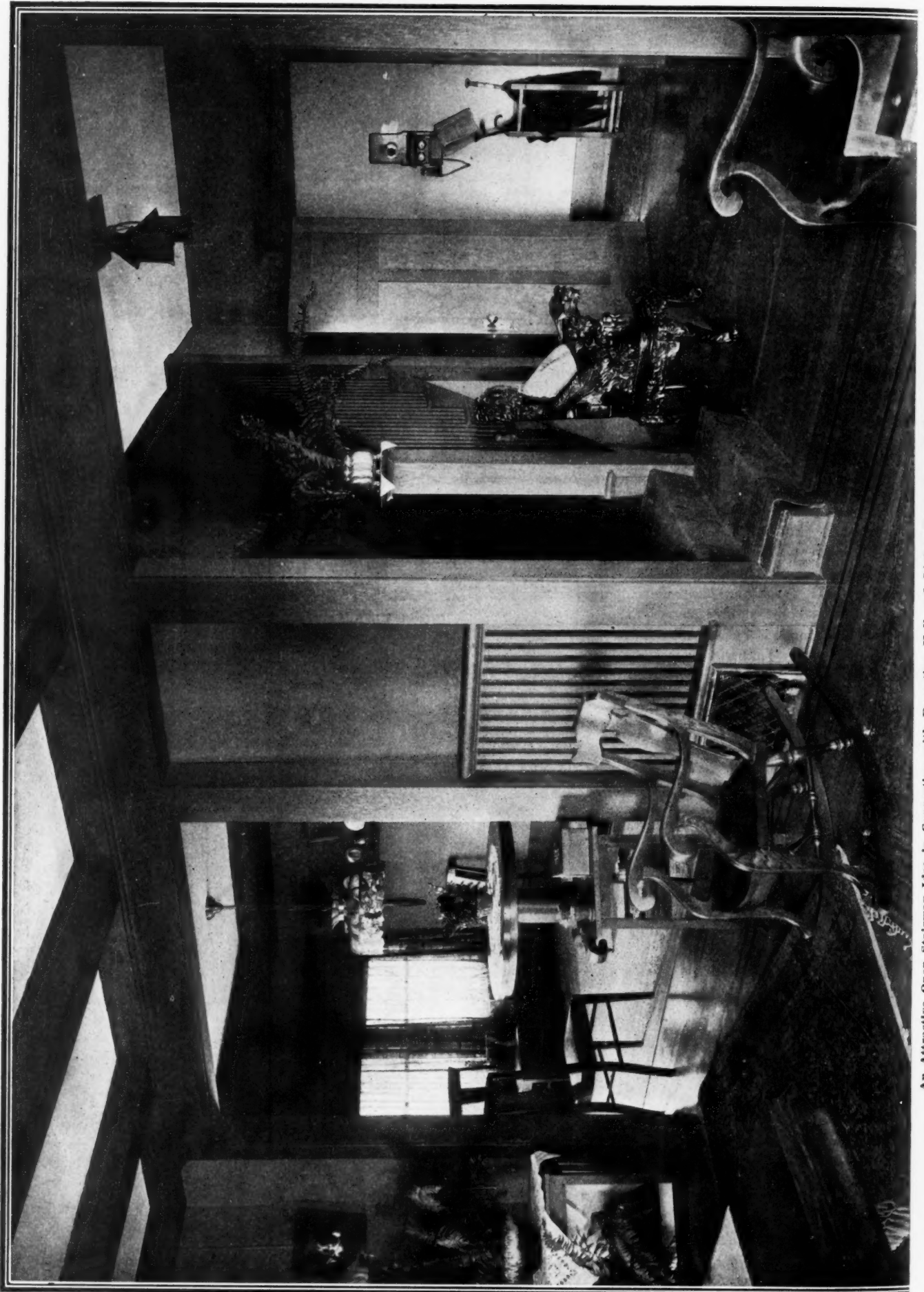


Second Floor Plan.

Arrangement of House. Size 27 feet 6 inches by 29 feet 6 inches.



Attractive Stucco House. Size, 27 feet 6 inches by 29 feet 6 inches. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$10.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6855.



An Attractive Open Stairway Idea in Connection with Reception Hall and Living Room in a Modern "Open Interior" Residence.



Comfortable Colonial Family House. Size, 28 feet by 41 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$10.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6854.

Story-and-a-Half Shingle House

Design No. 6854 is a house of Colonial style in the story-and-a-half type. Its exterior is simple yet pleasing and the interior arrangement includes a full list of the several advantages of this type of construction. The sides of the house are finished with shingles. The roof is of unusual design and constitutes a mark of distinction in this design. The main roof is of the pitch type while a secondary roof over the first floor rooms at the rear is of the gambrel type. Four round columns are used on the porch and the usual rail is eliminated. Chimneys are rather massive in accordance with the usual design in Colonial style houses.

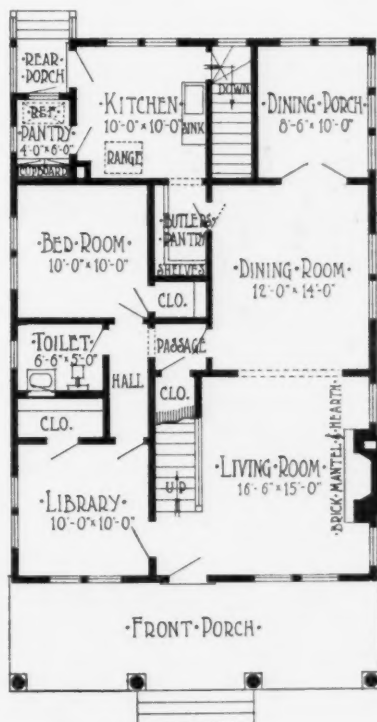
The front part of the house on the first floor is occupied by the living room and library. The living room and dining room are closely connected, there being a wide cased opening between these rooms. A dining porch forms an attractive feature at the rear of the dining room. Between these rooms and the kitchen there is a butler's pantry fitted with shelves. Another pantry, in which the cupboard is built and space is provided for the refrigerator, opening from the kitchen.

A bedroom and toilet are also fur-

nished on the first floor. Halls make all rooms easily accessible.

The second floor space is divided into

three bedrooms, a sleeping porch and a bath. A large hall and generous closet space are obtained.

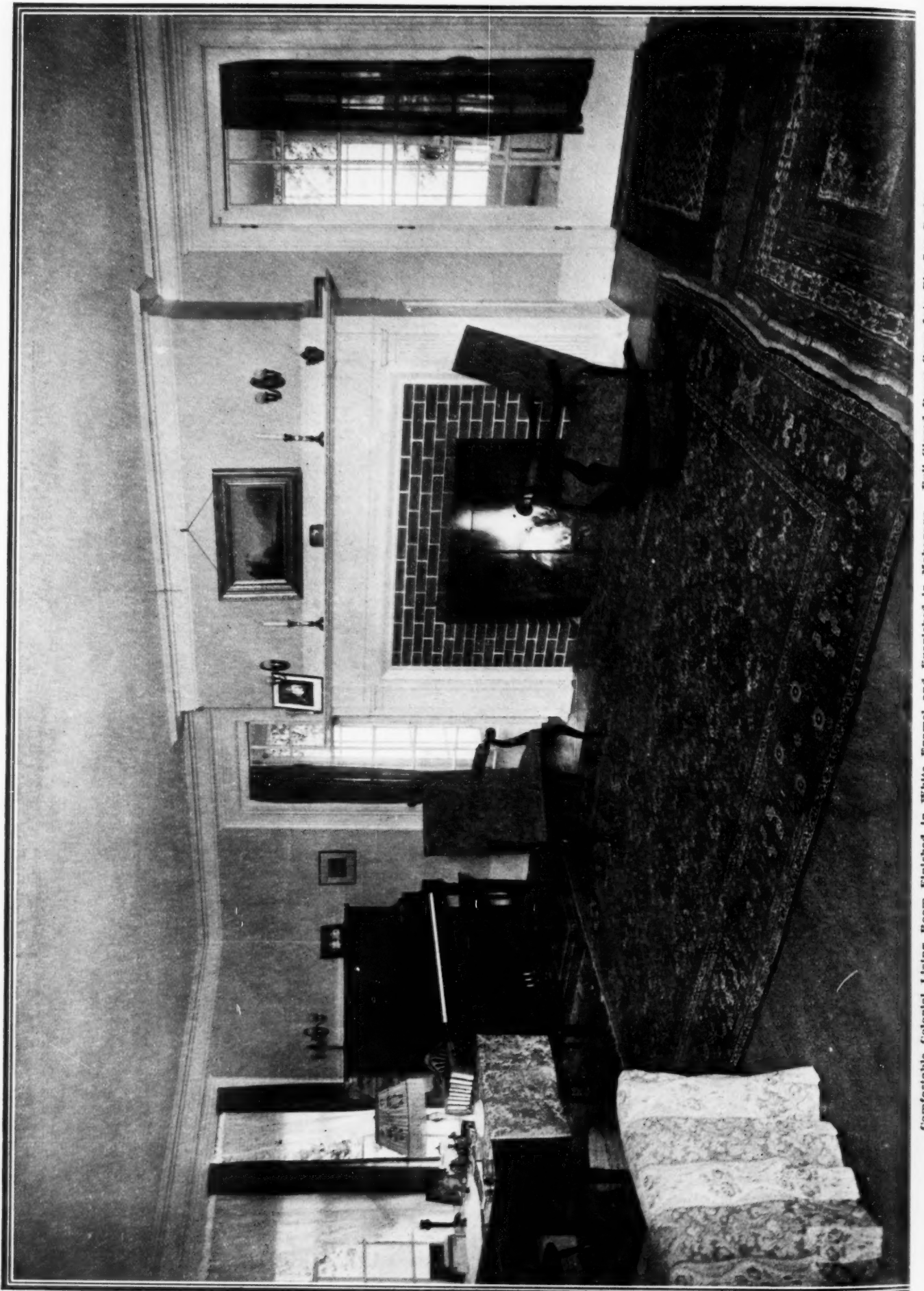


First Floor Plan.



Second Floor Plan.

Arrangement of House. Size, 28 feet by 41 feet.



Comfortable Colonial Living Room Finished in White Enamel and Furnished in Mahogany. Full Glazed Doors Open Into Big Sun Parlor.

Well Arranged Two Family House

The house shown here is designed to provide sufficient space for two families. The house is divided into two parts by a heavy partition thru the center, each side having a similar room arrangement. The exterior of the house is finished with beveled siding up to the sills of the second floor windows above which the finish is stucco. A large porch is provided across the front of the house. The porch and the chimneys are built of brick. The porch rails and columns are capped with white stone or concrete slabs.

The rooms are arranged to furnish a pleasant home for two families of average size. On the first floor on each side the living room occupies the front part of the house. The stair to the second floor is built up from one corner of this room. A fireplace is provided in the outer wall. A colonnade entrance leads back to the dining room. A four window bay is provided in the dining room. A buffet is built against the opposite wall and a little triangular case fills in the forward corner.

A hall leads back from the dining room to the first floor toilet, and a large

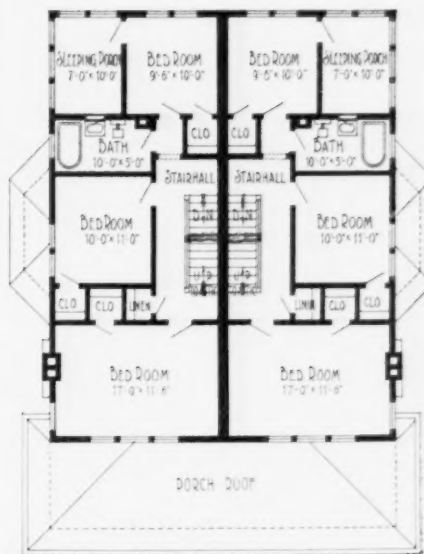
closet is provided off this hall. The butler's pantry has a cupboard on one side and work table, below which are handy drawers, on the other side. A double-acting door leads to the dining room and the entrance to the kitchen is

cased. The kitchen has four windows.

On the second floor a hall extends along the center partition from the head of the stair toward the front of the house. Three bedrooms and the bath are accessible from this hall. The sleeping porch is entered from the rear bedroom.



First Floor Plan.



Second Floor Plan.

Arrangement of Home. Size, 36 Feet by 44 Feet 6 Inches.



Large two family house. Size, 36 feet by 44 feet 6 inches. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$14.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6850.



Comfortable Colonial family house. Size, 30 feet by 26 feet 6 inches. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$12.00 per set. Blueprints consist of basement plan; roof plan; first and second floor plans; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6847.

Comfortable Colonial House

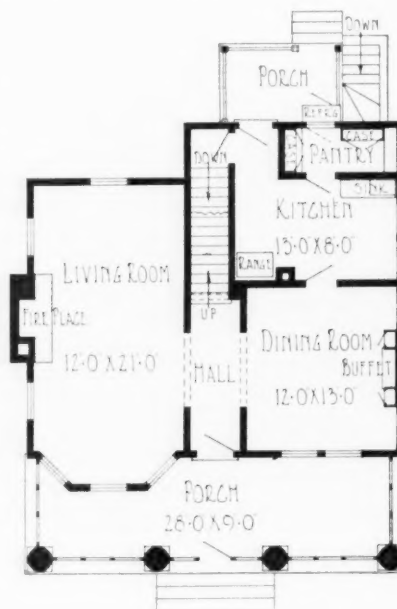
A house which will be very pleasing to those who appreciate the Colonial type of house construction is shown in the perspective and plan of design No. 6847. The exterior of this house is finished with wide clapboards thruout. The large chimney is of brick and tapers slightly above the first floor. There are four heavy, round columns supporting the roof above the front porch. No porch rail is used, which makes it possible to easily enclose the porch entirely with screens or storm sash. The windows form a distinctive feature of the exterior.

A hall runs back thru the center of the first floor to the stairway. Cased openings lead from this hall to the living room and the dining room. The living room is a very pleasant room extending back from the front along the side of the house. A fireplace is built into the outer wall near the center of the room. The dining room, kitchen and pantry are situated along the other side wall of the house. There is a buffet in the dining room and the pantry is fitted with shelves and a work table. The refrigerator is placed on the back porch, but it is arranged so that it opens from

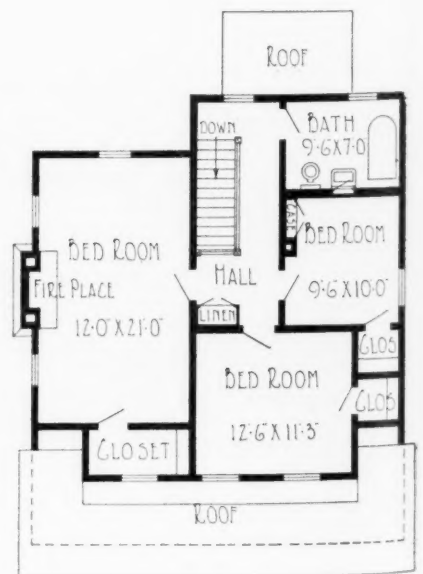
the pantry. The stair leading to the basement is entered from a passage between the kitchen and porch.

The second floor is pleasantly arranged. One large bedroom above the living room is especially pleasant. There

is a fireplace in this room and the closet is lighted by a front window. Two other bedrooms are provided on this floor. The bath is large and is fitted with a built-in medicine case. A large hall makes all rooms independent.



First Floor Plan.



Second Floor Plan.

Arrangement of Home. Size 30 Feet by 26 Feet 6 Inches.

Brick Porch Bungalow

This house is of frame construction the sides being finished with beveled siding and the roof being of the hip type broken up with small dormers. The porch and chimney are built of brick trimmed with white stone. In the rail of the porch a distinctive feature is obtained by laying up the brick in checker board fashion, the surface being divided into squares formed by placing three brick with their faces together, adjacent squares having the brick placed at right angles. Two courses of these squares are used above, and below which a single course of straight laid brick is placed, followed above by the stone cap and below by a stone sill. There are two entrances to the house from the street. One is from the front porch and the other is by a side stoop leading to the kitchen.

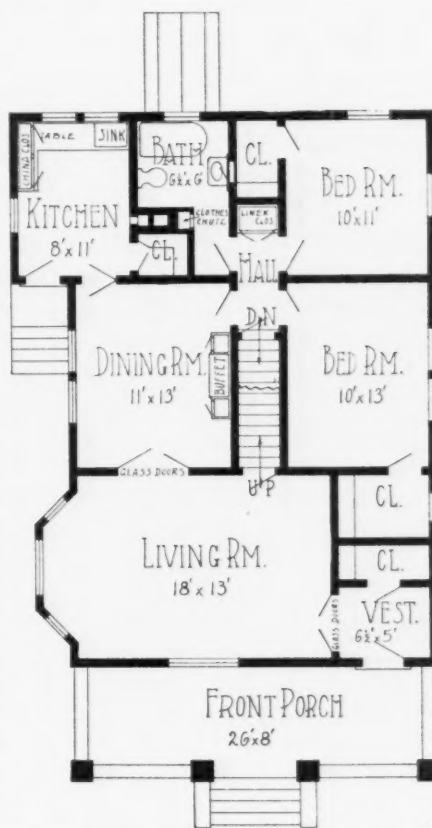
The front door is placed near the end of the porch. It opens into a little vestibule off of which a large closet fitted with a shelf and providing generous space for wraps is built. Double glass doors lead to the living room. At the far end of this room is a bay in which three windows are placed. These windows together with one front window and the glass doors provide an abundance of light in the living room and assure the owner that this will be a pleasant part of the house. A stair leading to the upper floor is entered from the living room.

Double glass doors are placed between the living room and the dining room. A buffet is provided in the dining room. The kitchen occupies an extended corner of the house to the rear of the dining room. This kitchen is arranged with convenience as the determining factor. There are three windows and a glazed door to brighten this room. Beneath the two windows in the rear wall there is a work table at one end of which is placed the sink and along the wall at the other end of which the cupboard is built. Plenty of space is provided for a gas stove and range along the other wall. A handy little closet with shelves on two sides opens off of the kitchen near the dining room door.

The other side of the house is reached from a little hall which is entered from the dining room. There are two bed rooms each of which is provided with a closet. The front bedroom is especially well fitted with an exceptionally large closet lighted with a single window. The bath room is placed between the kitchen and the rear bedroom. It is fitted with a built-in medicine case and a clothes chute. This latter feature is a great convenience and saves many steps since it is very handy to the bed rooms. There is a linen closet at the head of the hall and the door at the other end leads to the basement.

The basement may be divided off into

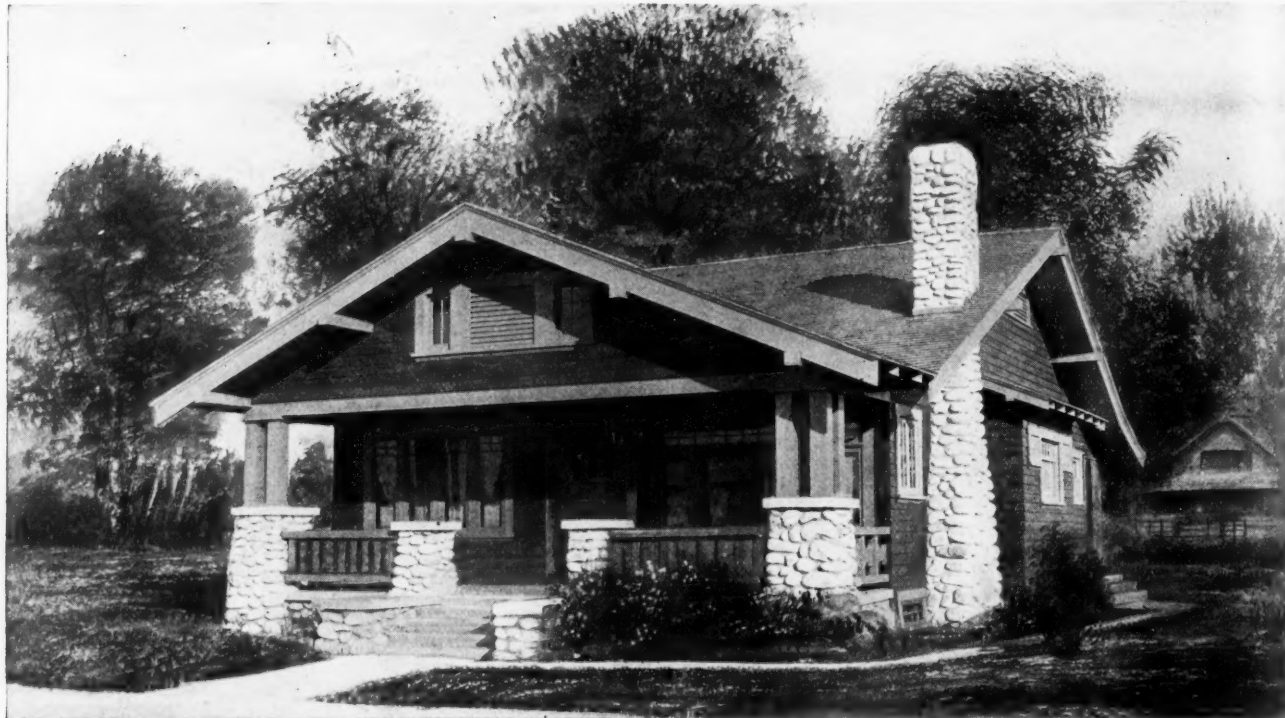
a furnace room, laundry and vegetable room. The laundry should be placed at the rear of the house so that the articles thrown into the clothes chute may be caught in this room.



Floor Plan. Size. 30 Feet by 39 Feet.



Unusual bungalow of five rooms. Size, 30 by 39 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$6.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections; and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6849.



Dignified and cozy five-room cottage. Size, 27 feet 6 inches by 35 feet. We can furnish complete set of blueprinted working plans and typewritten specifications for only \$7.00 per set. Blueprints consist of basement plan; roof plan; main floor plan; front, rear, two side elevations; wall sections and all necessary interior details. Specifications consist of twenty-two pages of typewritten matter. When ordering, ask for Design No. 6851.

Bungalow with Many Pleasing Details

The bungalow shown here as Design No. 6851 has more than the average appeal to those who appreciate the beauty and convenience of this type of house. Special features are evident in this house both in the exterior and interior design. The sides of the house are finished with wide siding strips. Large cobblestones are used in the construction of the chimney and the lower part of the porch columns. Heavy timber rails are used on the porch to harmonize with the massiveness of the stone masonry columns. On each corner of the porch there are three wooden columns carried up from the cap of the masonry columns to the beam across the front of the house. The roof is built with intersecting gables. A louvre is set high up under each of the gables. The louvre under the front gable is flanked on each side by a small window. The ends of rafters and purlins are exposed.

In the living room the most attractive feature is the fireplace on each side of which a book case is built. Small casement windows are placed above these cases. The fireplace may be finished either with brick or with cobblestones similar to those used in the exterior masonry. The living room is a well lighted room and is sure to be a pleasant part of the house.

Glass doors lead from the living room into the dining room. In this room the

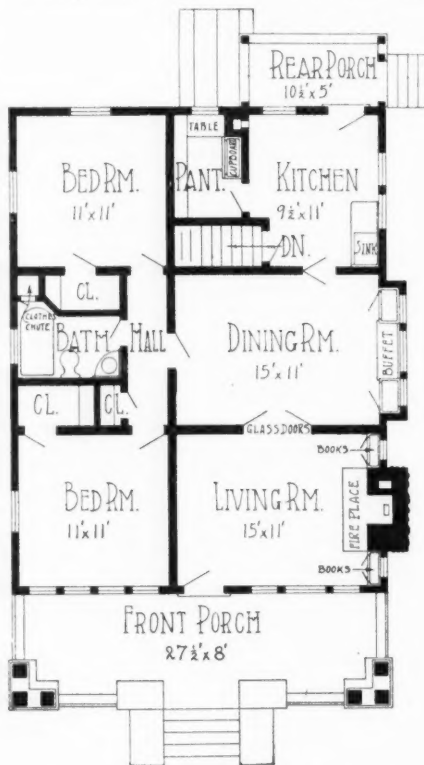
attention is immediately attracted to the buffet. A bay is built into the outer wall and the buffet sits into this bay, filling the entire space below the three windows. Since the doors of the buffet are flush with the main wall, no space is taken from the dining room by any projection at this point. The buffet is very much a part of the house in this

room and is designed to look well in its surroundings.

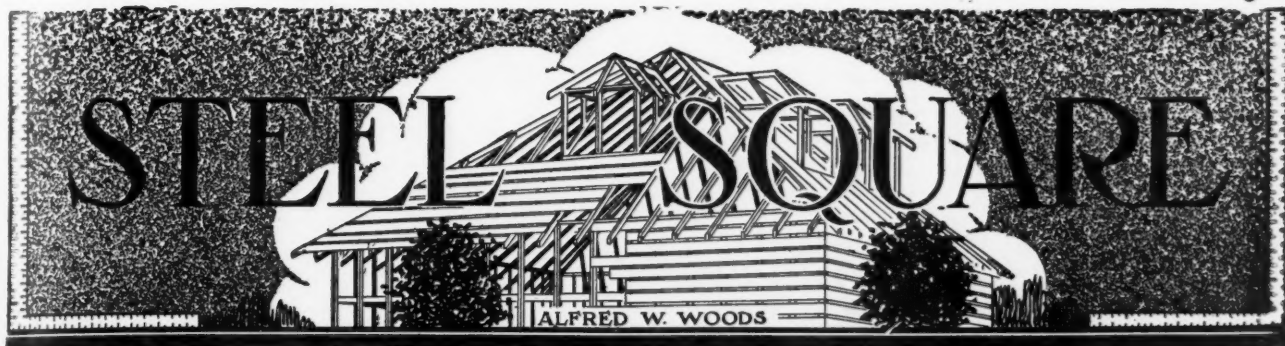
The kitchen has an adjoining pantry which may be used to greatly reduce the work of preparing meals. In this pantry a table is built under the window at the end, a cupboard is built against the wall next to the kitchen and a long shelf extends across the wall opposite the cupboard. The kitchen is large enough to be free from stuffiness and there are three windows to assure plenty of light. By including the pantry as part of the kitchen design, the handiness of a small kitchen is obtained without its stuffy, poorly-lighted features. The basement stair is entered from the kitchen.

Two bedrooms are provided on the other side of the house from the rooms already described. The front bedroom is especially pleasant on account of the large number of windows. There are four windows at the front and one at the side in this room. A hall connects the two bedrooms, and the bath room is handily placed midway between them. There is a clothes chute provided in the bath room. Liberal closet space is allowed for, both in the bedrooms and in the hall between them.

This house has its strongest appeal to the housewife because of the special attention which has been paid to the artistic effect of both the exterior and interior details and the arrangement of rooms, especially as regards the convenience of doing housework.



Floor Plan of Bungalow.
Size, 27 Feet 6 Inches by 35 Feet.



Possibilities of the Steel Square

ILLUSTRATING THE USE OF THE STEEL SQUARE IN SOLVING GEOMETRICAL PROBLEMS.

By A. W. Woods

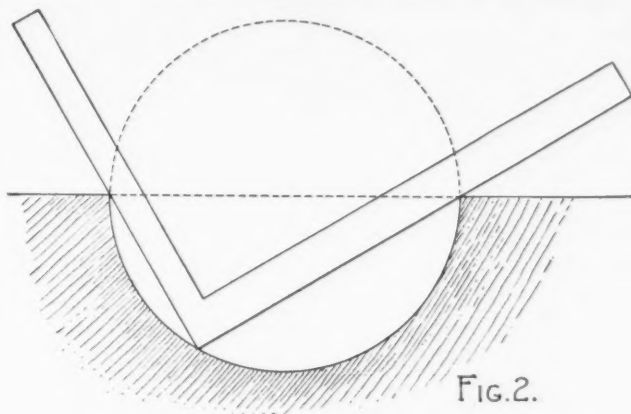
A CIRCLE may be instantly divided into halves or quarters as illustrated in Fig. 1, by simply placing the heel at any point of the circumference and by swinging the square so that like points on the blade and tongue will rest on the circle and a line connecting these points will divide the circle into halves while at the same time the heel is resting at the point that will equally divide the semi-circle. That part of the blade and tongue covering the circle represents the length of the chord that will divide the circle into four equal parts.

Now, let us study this figure a little before going further. Look! The part of the semi-circle covered by the steel square touches the circle at three points and the space covered by these points represents a right-angle triangle of 45 degrees but if we let the point of the heel rest on the circle and by swinging the blade or tongue one way or the other, the right-angle sides of the triangle will simultaneously change, one side becoming longer and the other shorter, till finally the triangle

will die out and the part covered by the steel square will show only a straight line across the circle, representing its diameter.

This illustrates that a true circle may be described by working between two points

the distance apart of which represents the diameter of the circle. A good way is to drive a slender nail, or brad, at the desired points and by placing the square with its inside edges against the nails, and with a pencil point in the angle of the square, swing from one side to the other, always keeping the edges of the square against the nails and it will be found that the pencil



Heel of Square Describes True Circle.

point will have described one-half of the circle and by reversing to the other side and repeating the operation, the circle will have been formed.

The reason we used the inside edge of the square rather than the outside, is because the inside angle affords a much better place for holding the pencil point.

This is a very useful problem in the absence of a pair of dividers, or some of the more common ways of arriving at a correct result. It is useful in testing a half circle worked out from a smooth surface, such as gouging out a circular trough from the solid timber, as shown in Fig. 2, in making patterns for a journal, etc.

In Fig. 3 is shown a problem in bisecting with the aid of the steel square. Here we have a large circle in which are shown four circles, the largest that can be drawn without overlapping one another. This is useful in laying out a quatre-foil window as frequently used in Gothic church windows. The proportion as shown applies to any size desired as illustrated and is obtained by taking the figures on the square to obtain the miter of a four equal sided frame, as 12 and 12,

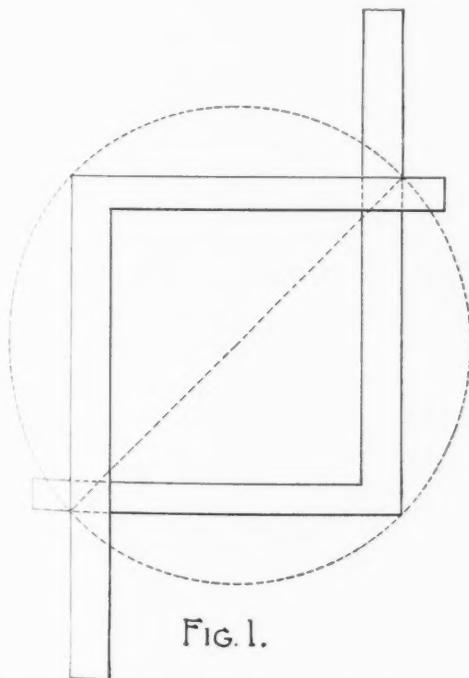


FIG. 1.

Dividing Circle into Quarters with Steel Square.

which is 45 degrees from the line of the tongue and by taking half of the complement angle, which in this case is also 45 degrees and this divided by 2 = $22\frac{1}{2}$ degrees and intersects the tongue at 4.97" and establishes the point of center for the smaller circle, four of which will be contained in the large circle.

Now suppose we wish the large circle to contain five circles. This is a little more difficult, because it cannot be readily worked on one square because the angle required does not read the same either

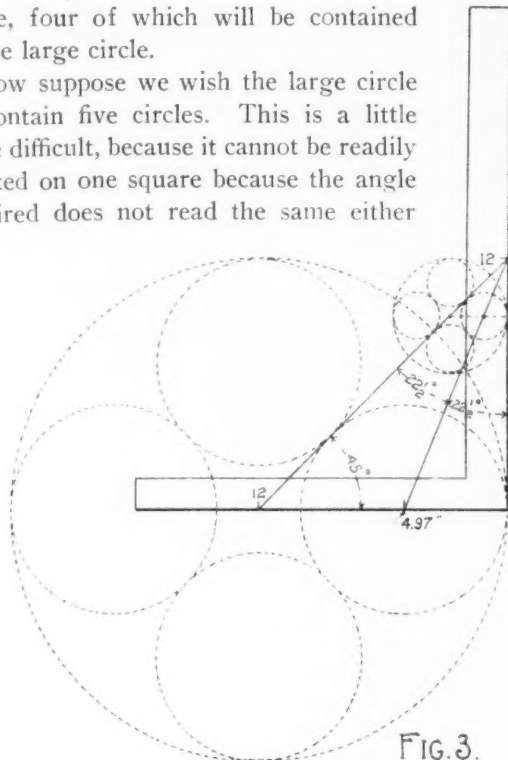


FIG. 3.
Bisecting with Aid of Steel Square.

way as in the case of the former example, but the same principle remains in solving the problem, as we will show.

The angle to take on the square for the polygon miter is 36 degrees and this is at 12 and 8.72 inches, as shown on square No. 1, and the complement of 36 degrees is 54 and the half of this is 27, which rests on the square at 12 and 6.11 inches, as shown on square No. 2 and where this line passes the tongue of No. 1 establishes the required center of the circle, five of which will fill the large circle.

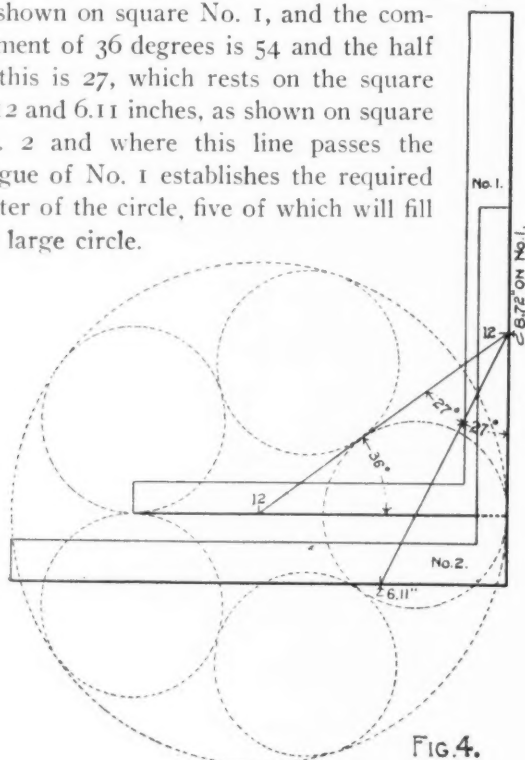


FIG. 4.

From this it will be seen that with the aid of a table of tangents in connection with a knowledge of their application to the steel square intricate problems in geometry may be readily solved. We have no doubt that some will look on these problems as nonsensical for they may never be called on to use them in the connection as here shown, but we wish to impress on the reader that the principle here involved is the same as in the framing of the rafters for a house containing like sides, as here shown, by the number of circles contained in the larger circle.



A Stairway with Bookcase

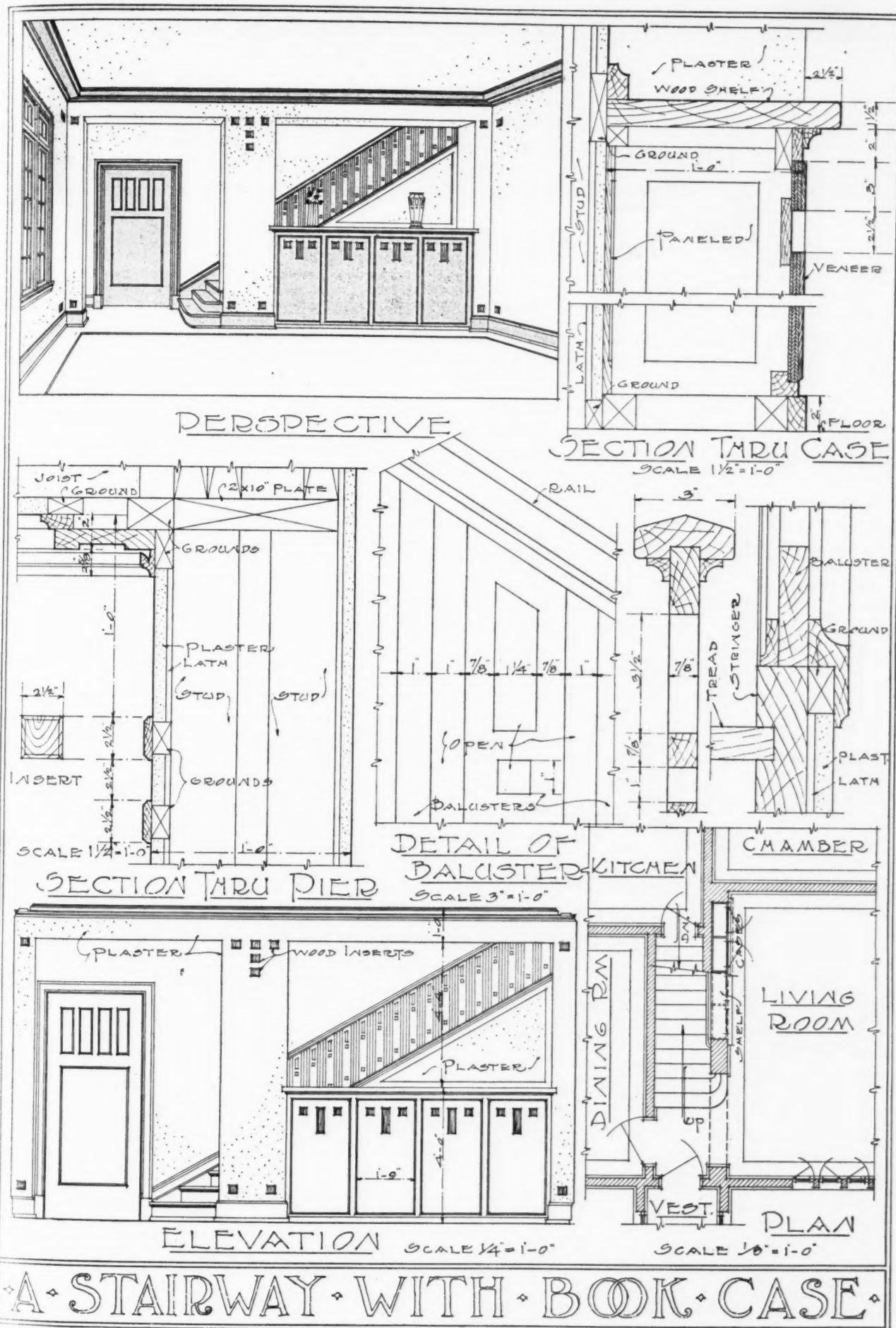
Designed by Ralph W. Ermeling, Architect.

HERE is an interior arrangement when the stairway is within the living room and not in a separate stair hall. At the same time the stairway is directly opposite the entrance to the house. The framing around the stairwell is taken care of by the beam across the end of the room, which is made a part of the architectural feature of the room. The width of the beam permits space enough for the depth of bookcases; and on top of them is a broad shelf which may be used for bric-a-brac. The stair rail is of very simple construction, altho not of the ordinary mill stock class of work.

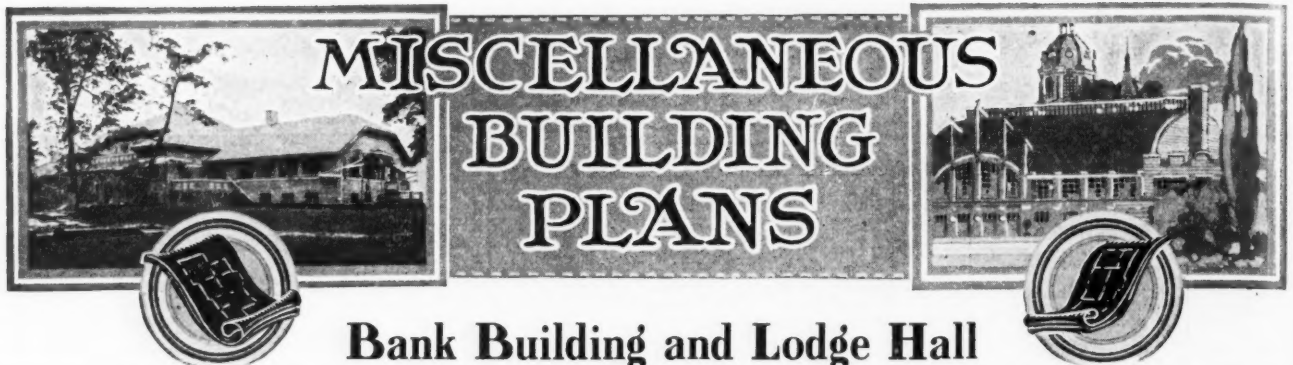
The doors to the bookcases are flush, with small paneled openings near the top. The plain doors are of special selected veneers with the inserts or small back panels of a contrasting wood or stained a different color. The trim and all other parts of the stairway are plain unselected stock. A less expensive treatment which will still give the same effect or nearly as good is to use simple plain stock for the doors with cleats well screwed or mortised in the back of the door to prevent warping, and using select finely figured veneered stock for the small panels. Glass might be used for the panels if preferred, if one piece veneered doors are used the 5-ply, $\frac{3}{8}$ -inch thickness should stand up without warping.

As a simple decoration and to prevent a too severe appearance of the plaster work, square wood inserts slightly beveled are introduced. These can be colored to suit the decorative scheme of the room.

A richer, altho more expensive, arrangement, would be to treat the pier and pilaster forms at the ends of the room by casing them in as columns. The side of the stair in the triangular space back of the bookcases can be finished in wood panels if desired. As a scheme for room decoration the broad soffit of the wood cornice can be stenciled with a suitable pattern, to make an inexpensive and rather rich edge to the ceiling.



Perspective Sketch, Elevation, Plan, and Scale Details of Semi-Open Stair Handled in the Modern Straight Line Style. Designed by Ralph W. Ermeling, Architect. For Descriptive Notes See Opposite Page.



Bank Building and Lodge Hall

THIRTEENTH OF A SERIES OF PUBLIC AND COMMERCIAL BUILDINGS—THOROLY UP-TO-DATE AND IMPRESSIVE BUILDING FITTED TO MEET THE NEEDS OF A BANKING BUSINESS IN A SMALL CITY OR GROWING TOWN. LODGE HALL ABOVE THE BANK.

SINCE the building which is to contain a banking business and lodge hall is sure to become the center of business and social activities among the men in the community in which it is erected, such a building should be somewhat out of the class of commonplace structures. Good substantial construction to which is added the necessary artistic treatment required to place it in somewhat of a class by itself are the most important of the several factors to be considered in the design of such a building. The

finish of the exterior may be made very impressive by the use of ornamental face brick with terra cotta trim. The use of these materials has come to be standard in city construction and there is nothing which impresses the stranger with the progressiveness of a town more than to see the business section being built up with structures in which these modern materials are used.

The building illustrated here occupies a corner lot and is 30 feet by 50 feet. The entire first floor is

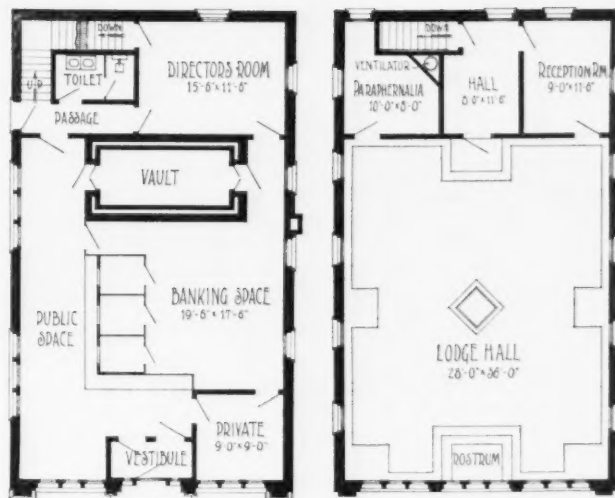


Front Elevation of Bank Building. Lodge Hall on Second Floor. Exterior Finished in Ornamental Brick and Terra Cotta. Design No. 6856.

designed as a bank and the second floor is taken up by the lodge hall. The ornamental front is placed on the 30-foot side of the building. The portions of the front wall above the first floor windows and between the sets of second floor windows are finished with face brick while the entrance, columns and entablature are built of terra cotta. The small-paned windows add a great deal to the distinctive appearance of the building. There is a sufficiently elaborate treatment given all of the details to mark this building as one of importance among the various structures along the street upon which it would be placed.

The heavy brass trimmed door of the bank opens into a small vestibule in which there are entrance and exit doors connecting with the main corridor. At the right upon entering is a private office having doors both into the public space and into the banking space. Three cages are placed facing the side wall of the building and bounding the main corridor near the front of the bank. These cages are built up of wood panels from the floor to the counter, which extends from the private office along the side of the first cage and along the front of the three cages down the corridor. Above the counter there is a bronze grillwork on the outside of the cages and steel lattice partitions are used between cages.

The vault occupies a position across the rear of the banking room from the corridor to a passage between



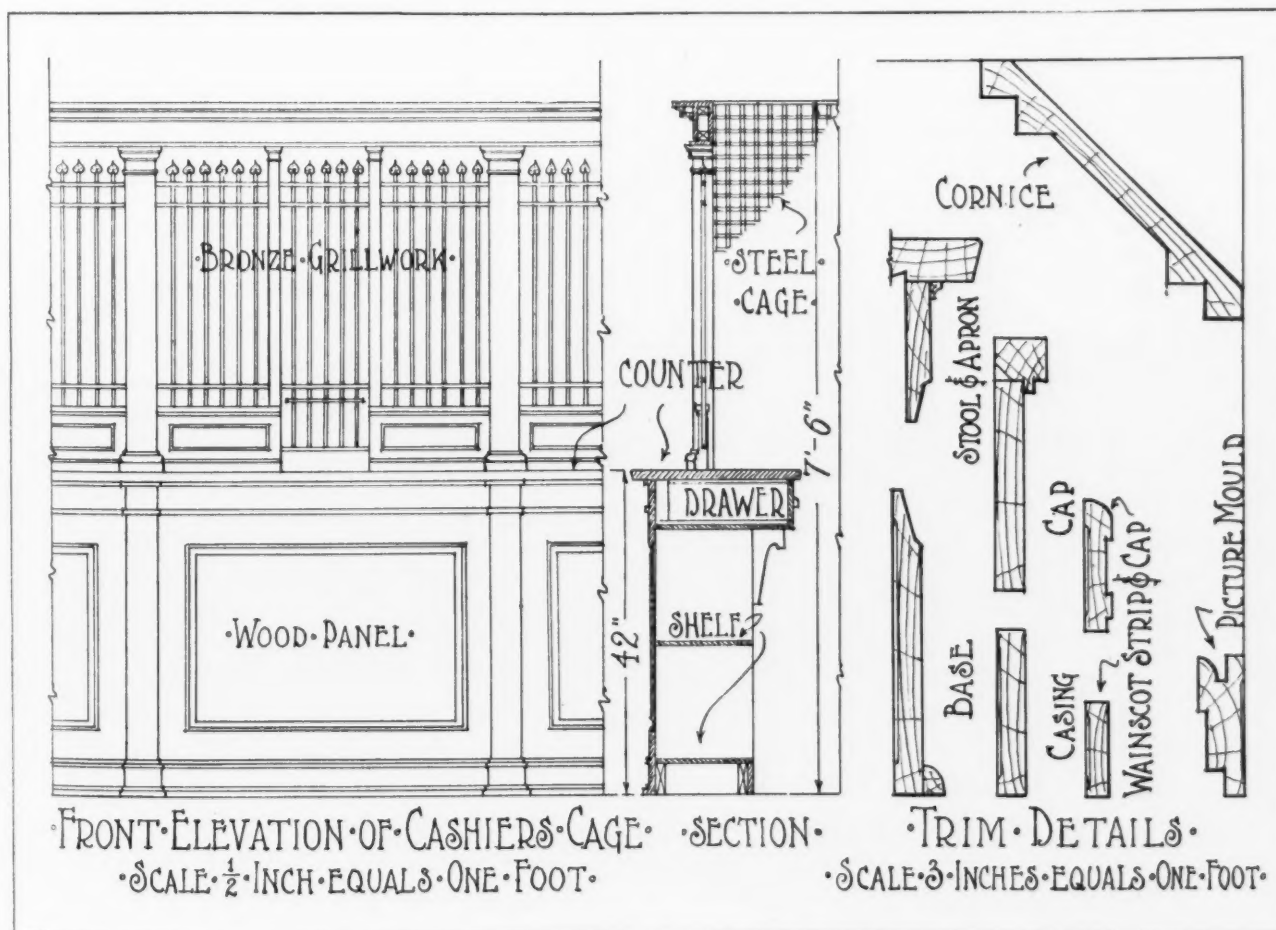
First Floor Plan.

Second Floor Plan.

Arrangement of Bank Building.

the banking space and the directors' room at the rear. There is a door opening from the side street into a passage leading to the directors' room at the rear of the public space. A toilet is provided off this passage. The stair leading to the lodge hall is built into the corner of the building near the street door.

At the stair end of the second floor there is a hall, reception room and storage room. This leaves a space 28 feet by 36 feet for the lodge hall.



Front Elevation of Cashier's Cage and Trim Details in Bank Building Shown on Preceding Page.

Designs for Factory Office Buildings

CONCRETE STRUCTURE OVERLOOKING THE MISSISSIPPI AT ALTON, ILL. THE PLANT OFFICE OF THE STANDARD OIL CO.

Photo and Description by Herbert C. Crocker

THIS is the third of a series of three articles on extra attractive plant office buildings at Alton, Illinois.

The office building of the Standard Oil Company located just south of Alton built several years ago has recently been enlarged and remodeled.

The size of the building is 46 feet 6 inches by 56 feet 2 inches. A veranda, or terrace, seven feet wide extends across the front of the building.

One of the entrances to the basement is under the veranda on the left side and about half of it is used for a storage vault. Two other large vaults, the lavatory, a room for stationery and a section for the heating plant is located in the basement.

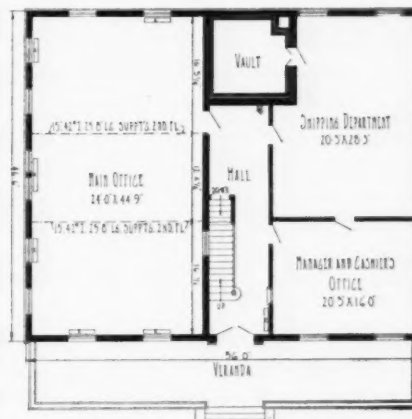
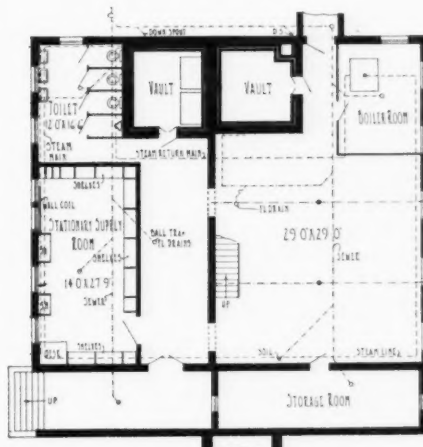
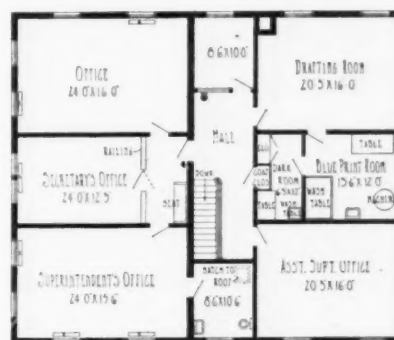
The arrangement for the offices is to secure most conveniences for the officers. A passageway extends thru the building. The office of the manager and cashier is located to the right. Entrance is had only thru the shipping department which secures privacy. On the left side of the building is a spacious office room 24 by 44 feet for general work.

The superintendent of the plant has an office on the second floor and from it he may look over the plant. His assistants are at the front on the opposite side. A large portion of the second floor is set aside for the engineer, a drafting

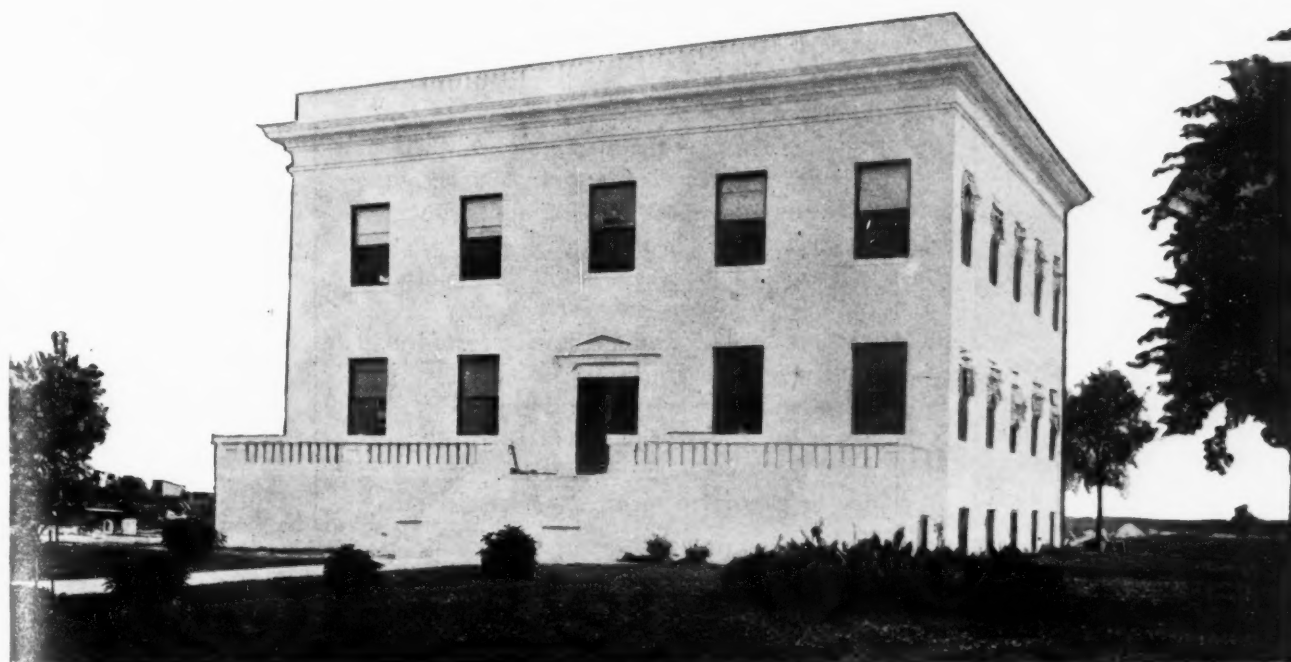
room and blue print rooms where the many necessary plans of new improvements in the plant are made. The secretary has a room on the opposite side and there is one unassigned office.

Concrete is used in practically everything erected by the company and it was utilized in the office building. The office is of almost solid white.

The plans were prepared by the engineering department.



Floor Plans of Standard Oil Co.'s Office, Alton, Ill.—Basement Plan to Left, Main Floor Plan Right, Second Floor Plan Above.



Plant Office Building of the Standard Oil Co. at Alton, Ill., Designed by Their Own Engineering Department; Cost \$30,000.

"My ambition is not so much to impart knowledge as to inspire action."

—THE MAN FROM THE LUMBER YARD.

We appreciate the work of the Man from the Lumber Yard and others on our staff, but the people who give the most real information and produce the most of action, whose writings are of the greatest value to our readers, are those who write the advertisements which we print. EDITOR.

A MONTH since I was most interestingly entertained in a plant where portable circular-saw tables were made. It was a rare opportunity to come in contact with a man who so thoroly understood his business as the manager of this concern and was so enthusiastic about his work. He had the feeling that he was in business not only to make bread and butter for himself and his employees, but to lighten the burden of mankind. He showed, among other things, very conclusively, that at the cost of one cigar per day for power, one man and his machine would do more than a dozen men by their own muscle.

More Pay—Less Cost

I expressed to him the regret that so many men would necessarily be thrown out of employment by the introduction of such as this. He quickly drew my attention to labor statistics which prove that with increased facilities the pay of the worker increases as does the benefit to the ultimate consumer. He was an expansionist clear thru; he sees great opportunities ahead of the American workman and the American manufacturer, but he insists there is only one way in which we can compete with the world, and this is to be properly equipped in every department thru-out. He asserted that the machine is just as much of a necessity for success in peaceful pursuits as it is on the battlefields.

I wished that every one of my readers was able to hear him; and expressed that much to him. Turning to his desk he picked up a little booklet, and said: "Every one of your readers can have one of these at the cost of a postal card."

Being of a restless disposition, I get around

the country considerable and find that manufacturers are more than pleased to be of help in giving information to any honest inquirer.

Occasionally I find a traveling man so narrow between the eyes, that he thinks he is going to be cut out of his job by the advertising campaign carried on by his people. But the wise salesman knows that it wastes his time and that of the worker to make a personal presentation of his goods.

Some publications play all ends that will place a penny in their pockets.

Policies that Win

The AMERICAN CARPENTER AND BUILDER says to their readers: "We will not publish an ad where we do not have confidence in the advertiser or the worth-whileness of the article advertised."

To the prospective advertiser the AMERICAN CARPENTER AND BUILDER says: "We will not take your money unless we know that your product is of interest to our readers."

While this proposition costs the AMERICAN CARPENTER AND BUILDER hundreds of dollars every year, the publishers say they will stand by it, win or lose. From all appearances they are winning.

A Tragic Failure

We who have been in the merchandising game for some time know of failures of many good, practical, labor-saving devices because of the inability of the makers to market them. One of the most tragic that has come to my attention was that of a young manufacturer in a prosperous New England town. He had always been a good earner, was saving his money, and a close student of mechan-

Old Saws Reset

Time is money.

Learn of time savers from the ads.

There are no more opportunities for the man that is dead or *thinks he can't benefit by the new tools and appliances.*

To be a winner, be ready.

The ads tell you how to be ready.

The hen advertises because she is proud of her job.

If she were not she would keep still.

The advantages are with the man who gets there first.

Read the ads to learn how to arrive quickly.

When a man doesn't speak well of his product, *can you be expected to think well of it?*

When opportunity knocks it is profitable to answer.

You can do it by writing the advertisers.

The advertiser enables you to have the information *you want when and where you want it.*

Do you want to increase your earnings?

The ads tell you of money savers.

Opportunity never seeks an unfit man.

Nor does a man blind to his opportunities read the ads.

Don't grieve over lost opportunities.

Look over the advertising pages for new ones.

The man who can't see ahead and the man who can't *think ahead* are the *two men of our subscribers who do not read the ads.*



Old Grin Says that the Dope Found in Many Advertiser's Catalogs is Better than a College Education.

ics. By rigid economy he was owner of a well-equipped shop by the time he was twenty-six, at which time he married. His wife brought him a little over ten thousand dollars.

He became interested in the manufacture of a tool of considerable merit. After he was thoroly equipped and in position to turn out a volume, he called on the wholesale distributors, who said, as if with one voice: "You have an excellent time- and labor-saving tool. Make a demand for it and we will buy it."

He inquired of some retail dealers for the names of their trade journals, and began taking space, but made no progress. He fell an easy prey to the representative of a national fiction magazine, whose enormous circulation appealed to him, because he did not stop to consider that out of every thousand readers there was barely a possible one that was a user of this kind of a tool.

He lost his wife's money, his own money, and what was fatal, he lost heart. Thousands of mechanics lost the opportunity of using an excellent tool.

When you see a good thing advertised, be a sport and spend a cent. You will

probably get information that will be of value to you now or later.

How are You Equipped?

Some contractors, builders and mechanics are as hard to arouse as a sleeping porch.

They take interest only when forced to do so. Their shoes will never wear the stepping stones to *Success*, but will be worn out on the slide to the *Dump*. There is no dead level.

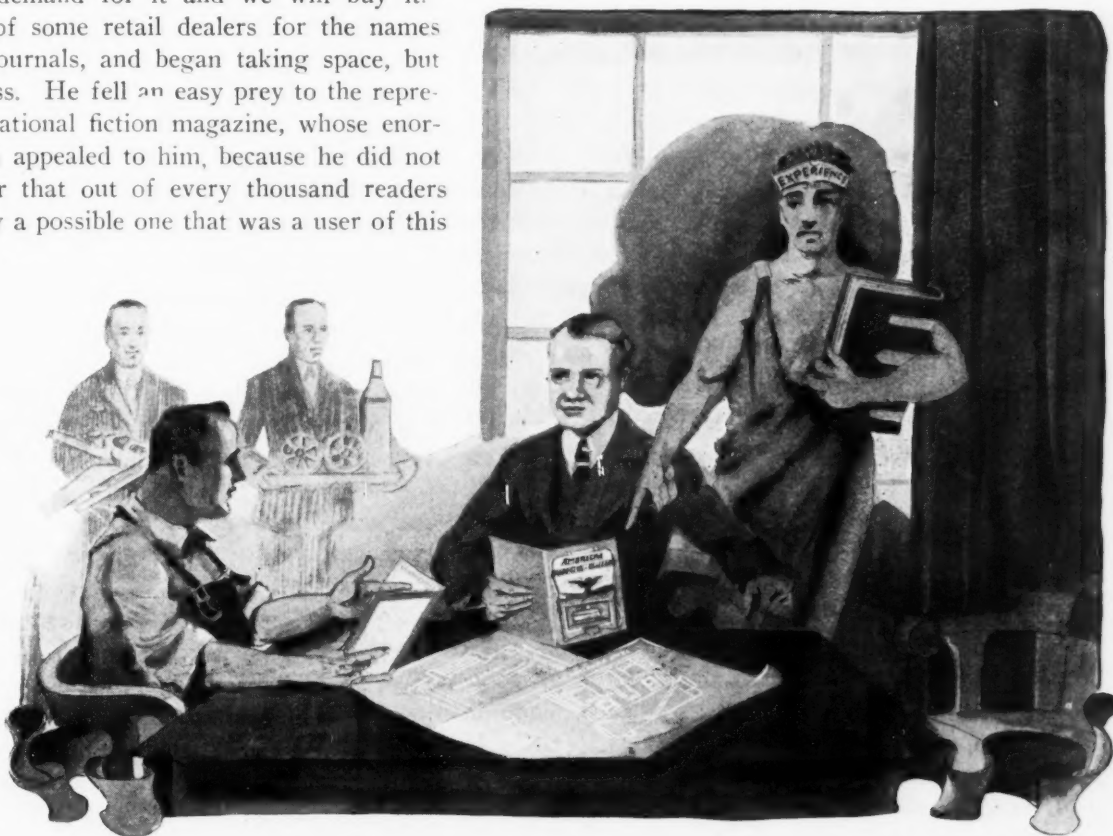
A workman is known by his tools. Superior tools are a mark of the superior man. If I were putting up an office building I wouldn't think of letting the contract to a man that wasn't equipped with a hoisting derrick as well as safety devices and time savers.

If his bid was low he would have to cheat on material to come out even with the properly equipped man.

I couldn't reasonably expect a Twentieth Century building from the hands of a Nineteenth Century man. I will have something special to say in my December letter about the progress being made in many small and medium-sized towns in factory and office buildings all of which require the latest in architecture and construction. The contractor and supply men must work together to secure proper results.

The time is at hand when the building in the small town must have as good in design, material, finish and workmanship as the city building.

This opens a wonderful field for our readers in the smaller towns. "But," you say, "where are we to secure this knowledge?" Experience speaks loudly



The experience of a hundred people is at your service in our advertising pages to show you how to save money and muscle.—EDITOR.

thru the pages of your building magazine. Manufacturers of tools, of machines, of building material, of finishing material, stand offering the results of years of toil and test to the man who will ask.

\$10.00 Worth for 60 Cents

Last week business took me over to Detroit, and I had my attention attracted by the work being done by a house carpenter in the hotel. He was using a compass saw that didn't stick or bind, which is the usual habit of compass saws. He showed his saw with considerable pride, and said he could do "twice the work with half the power," because of the thin back. He saw the ad. in the October issue of the AMERICAN CARPENTER AND BUILDER and had at once inquired of several hardware dealers until he found it. As I moved on he said: "It cost me only 60 cents, but \$10.00 wouldn't buy it if I couldn't get another."

Many of our readers continue on in the same drudgery because they lack the initiative when new things are presented.

My ambition is not so much to impart knowledge as to inspire action.

If you are content with your present facilities and equipment it is time for you to fold your hands and call in the undertaker and grave digger.

If you are not content, act; study the offerings that are made to you thru the advertising pages as carefully as you study the most instructive pages of reading matter.

The man who *properly* utilizes the advertising pages is *placed in position to possess* information that enables him to *progress* and make *profits* that *produce prosperity*.

Yours truly,

THE MAN FROM THE LUMBER YARD.

Lighting the Farm Home

A GENERAL VIEW OF THE TWO MODERN SYSTEMS OF LIGHTING FOR ISOLATED BUILDINGS, ACETYLENE GAS AND ELECTRICITY

By O. W. Visscher

UP-TO-DATE farming methods have called the lighting problem prominently into view because farm administration in its newer phases makes it imperative to have light in locations where it was considered unimportant before, and to have more light everywhere. Good light adds much to the efficiency of the farm. The barn, the dairy and the stables are the farmer's work shop. The progressive farmer and the manufacturer are both learning the same lesson, viz., that good light plays. Work in a well-lighted room can be done so much more quickly and better, and it pays a big profit on the investment.

A good lighting system also adds much to the comfort of farm life. It can have much to do with the "back to the farm" movement that is stirring the entire country, and placing farm life on a much higher plane. There is nothing more cheerful than a well lighted, warm sitting room in which the family can gather, and there is no better way to combat the lure of the city for the sons and daughters, than to provide the home with these city comforts. The farm home is beginning to take its distinction from the quality and brightness of its lights. The evening's pleasure is always judged in this way.

The lamps of olden times were used chiefly in temples, and had an oil or fat or some combustible material like pitch or resin for their fuel. Ever since these primitive lamps attracted the attention of some inventive minds steady progress has been made in the development of lighting systems. Especially in the last one hundred years has invention been active. It is but recently however that the farmer has been afforded advantages such as those who live in the city have long enjoyed.

In modern times we have three principal illuminants,

viz., oil, gas and electricity. All are now available for use on the farm.

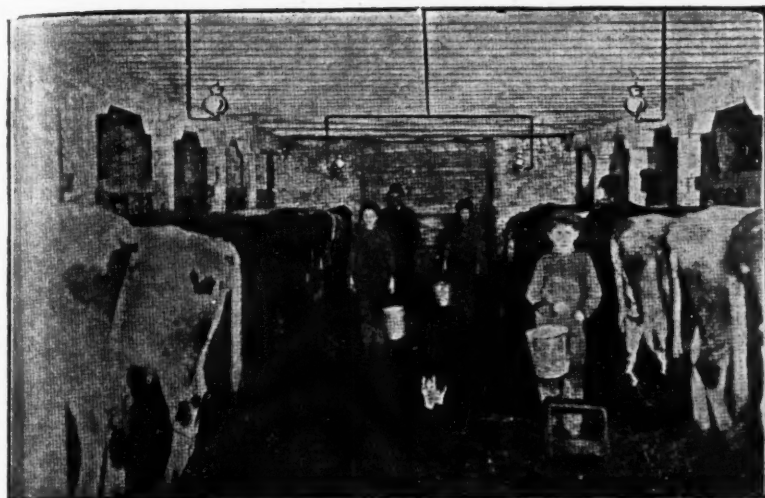
The oil lamp with which all are familiar is by far the most common. It is a very dependable lamp and has been greatly improved in the last twenty years. Each lamp requires the daily attention of filling and cleaning, and in addition the burners should get a thoro cleaning at intervals. When well cared for, the oil lamp is an entirely satisfactory solution of the lighting problem in homes where but little light is required, and where the portable lamps are not likely to cause any fire hazard.

Oil and gasoline lamps are now made in which the fuel is converted into a gas, and this heats a mantel until it becomes incandescent. These lamps give a very bright light and are economical in their use of oil. They required rather skilled attention, however, and it takes a few minutes to start the light. The danger of breakage of the fragile mantels is particularly great on these portable lamps, and the mantle has to be in good condition in order to give a satisfactory light.

These oil lamps can hardly be classed as lighting systems. A modification of the gasoline lamp, however, deserves this name, for in it gasoline or gasoline vapor is supplied to gas chandeliers and fixtures.

Modern Acetylene Systems

The acetylene lighting system is the most popular form of gas lighting. Acetylene is a gas which is produced by water and calcium carbide coming in contact. Calcium carbide is a product of the electric furnace. It, like aluminum and carborundum, is a product which has long been known to the chemist but cannot be produced artificially without the intense heat of the mammoth electric furnaces which have been built at Niagara Falls and other large water-power



View of Cattle Stable Equipped with Acetylene Gas Lamps.

centers. The gas is generated in simple and automatic machines. These are made in various capacities. In the smaller size one charge of carbide will supply sufficient gas for from one to three weeks, while in the larger size supplied for use on the farm, sufficient carbide can be put in the machine so that it will operate without any attention whatever for as many months. The process of cleaning and re-charging is a very simple one in the modern machine, and usually takes less than one-half hour. Acetylene light has a peculiarly pleasing quality, since it is very brilliant and steady, yet at the same time it does not tire the eyes. The reason for this is that the color of the light is exactly the same as that of sunlight. The gas is so rich in illuminating power that a 25-candle-power light gives out one-tenth as much heat as a 25-candle-power oil or gas flame.

No matches are needed in connection with an acetylene plant, since friction lighters have been developed to such a point of perfection that they throw a spark into the gas jet as the valve is opened. Electric lighters are also sold which turn on the light from a distance. These are peculiarly convenient for out-door and cellar lights. The acetylene lighting system is one of the safest systems known. It is interesting to know that of all the 4000 fires reported in four large agricultural states, but one of them was chargeable to acetylene, and in that case a portable lamp was overturned. This safety feature is very valuable in barns. The barn lights are entirely inclosed and are provided with friction lighters. There is no danger of fire and no need of lanterns in a barn thus equipped.

As an evidence of the dependability of acetylene many of the buoy lights anchored by the Government near treacherous shoals and dangerous rocks are lighted by acetylene.

An incidental convenience of such a gas plant which many a housewife values most highly is a gas stove on which all the light cooking can be done more economically and far more easily than in any other way.

Electric Farm Lighting Plants

Electricity is also being used extensively for farm lighting. The suggestion of such a possibility ten years ago would have been laughed at. The electric plant has very recently been made valuable for use on the farm by the invention of the tungsten (Mazda) lamps. These lamps require but one-third as much current as the former carbon lamps and can therefore be used where the cost of power and equipment for the old style lamps would be prohibitive.

There are almost as many varieties of electric systems as there are manufacturers; but they may be generally divided into two classes. In the first, the engine and

dynamo are so designed that current can be used just as it comes from the machine. A storage battery is always added to provide current when the plant is shut down. It is the intention to supply current direct when the load is heavy and to use the battery as an auxiliary. These plants are necessarily of rather large capacity. They are very well adapted for large farms and country places. The better grades of these plants give a quality of service which is fully equal to that given by the city central station.

The more usual and less expensive farm lighting plants make the storage battery the principal source of current supply. A small dynamo is provided which is driven by its own engine, or by an engine which also does other work, and this charges the storage battery. As a rule, these plants are of the "low voltage" type, since a "low voltage" battery is much less expensive than a battery designed for 110 volts. The battery is usually of such size that it supplies the home with light for about three days on one charge. It is then necessary to run the plant for from eight to ten hours to fill the battery with a new supply of electricity.

The attention required on these plants has been made a minimum by automatic devices of different kinds. In the first class of plants the engine has to be run whenever the lighting load is heavy. It charges the reserve battery while supplying light. In the second class of plant the engine requires the usual attention during the ten-hour run while charging.

The modern storage battery is remarkably fool-proof. If every cell is kept well filled with distilled water, and if it is never allowed to stand discharged, it will have a long, useful life.

The safety of the electric system is well known. There is practically no danger of fire in home or barn, and the quality of the light is excellent. With an electric plant of the first class, many of the electric conveniences enjoyed by the man in the city are available, such as electric irons, electric fans, etc.



EASY LESSONS IN STAIR BUILDING

Hand Railing Explained



Showing How to Lay Out a Wreath Rail Over a Scroll Curve

Lesson 5

By Morris Williams

HAVING already shown how to construct a wreath rail over a turn-out curve less than a quadrant, and one over another greater, we will now show how to proceed with a case of an exact quadrant and use it as a part of a scroll curve at the bottom of a stairway,

The plan of the scroll and few steps adjoining is shown in Fig. 25.

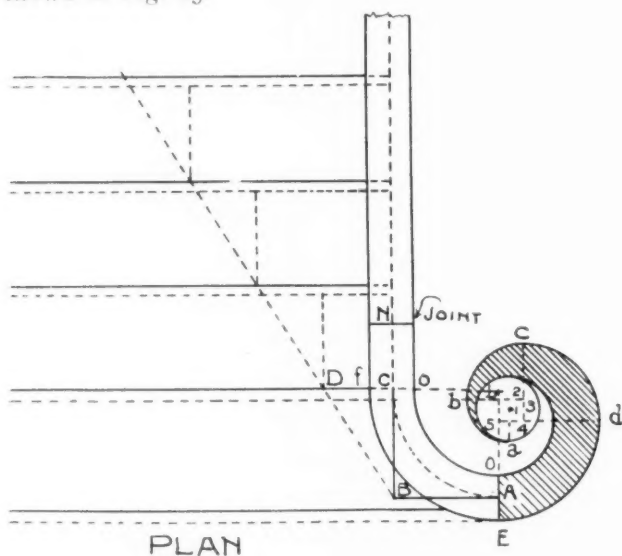


FIG. 25.

Plan of the Scroll and Few Steps.

In Fig. 26 is shown what is known as the eye of the scroll, shown in Fig. 25 right above the curtail step. Make its diameter about 2 inches wider than the width of the plane rail and divide it into 6 equal parts.

These are used as shown in Fig. 25 to locate the centers wherefrom to draw the different sections of the scroll curve. Locate center 2 at a distance from center 1 equal to the length of one division; center 3 from 2 equal to two divisions; center 4 from 3 equal 3 divisions; center 5 from 4 equal 3 divisions; and center 6 from 5 equal 4 divisions; all as shown at right

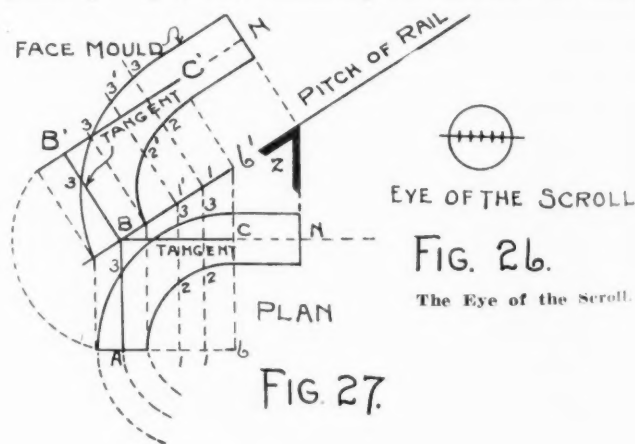
angle to one another.

Draw the first quadrant from center 2, as shown from a to b; the second from center 3, shown from b to c; the third from center 4, as shown from c to d; the fourth from center 5, shown from d to e; and the fifth from center 6, as shown from e to f.

To draw the inside, measure at f the width of the rail, as shown from f to o. Draw the quadrant o o from center 6, the next from center 1, and the remainder from center 4 to the eye.

The only part of the scroll rail that will have to be twisted is the top quadrant, shown from C to A, the remainder around the eye shown shaded being left square to the face of plank, and jointed to the wreath at A. To lay out the face mould for the wreath, reproduce the quadrant A-C and its tangents A-B and B-C, as shown in plan, Fig. 27.

From B draw the pitch of the rail and square to it the lines B-B' and 6'-C', each equal in length to the plan tangent A-B; connect B'-C' and prolong to N so as to get few inches of shank from the curve to the joint. Draw lines across the plan up to the pitch line, and therefrom square to it, as shown to and beyond the tangent B'-C'. Upon these lines find the points 3-2—3-2, etc., measuring the distances on each



Showing How to Lay Out the Face Mould by Ordinates.

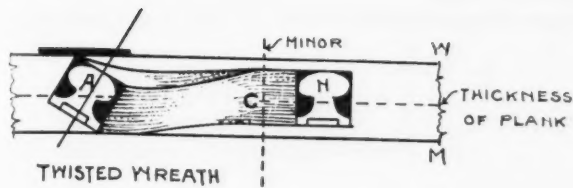


FIG. 28.

A View of the Wreath After it is Twisted.

from the pitch line B-6¹ to agree with the distances shown across the plan from the line A-I-I-6. Now trace the outside curve through the points 3, 3, etc. and the inside through the points 2, 2, etc. and make the joints square to the tangents. The twisting bevel is shown at Z, and is to be applied to the bottom joint directed as shown in Fig. 28 towards the inside.

The perspective sketch, Fig. 29, illustrates precisely the whole operation. Here we find the center line of the wreath winding upon the pitch plane, the tangent C¹-B¹ inclining and the tangent B¹-A¹ level to align with the level block of the scroll, so that the wreath joint cut square with the tangent and face of the plank will be a square butt joint as shown at A.

We here find also that the bevel applied as shown upon the face of plank, or the wreath plane, which means the same thing, will correctly guide the squar-

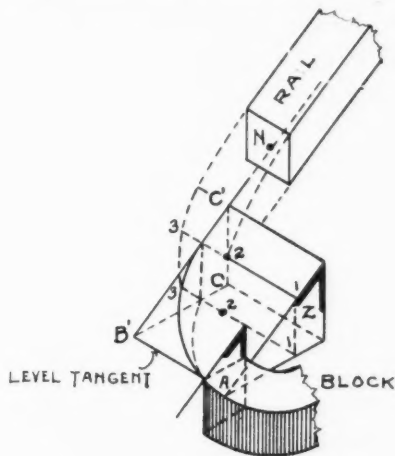


FIG. 29.

A Sketch Showing the Nature of the Lines Made Use of in Fig. 27.

ing or twisting of the wreath at this end, as it is shown accomplished in Fig. 28.

We further find the utility of the lines 1-2-3, as made use of in Fig. 27, those across the face mould being shown in Fig. 29 right above those across the plan, and because the two sets are level lines, it follows that equal measurements on each will produce a curve upon the pitch plane that will be strictly perpendicular to the plan curve of the wreath, which is the object to be attained. Let it be understood that this figure contains the fundamental principles of handrailing and that a thoro comprehension of its elements will enable any one to overcome all difficulties that may ever be met. We know of many different "Methods" and "Systems" to construct wreaths, but of not any

that is not based upon the lines illustrated in this figure, and are quite certain that none exists.

In future lessons, we shall make use of different systems that are at present in practice to lay out wreath rails. They all differ in the arrangement made of the lines and vary in merit in regard to their simplicity, but it will be found that each one is so closely related to the other and all to the system exemplified in the figures made use of in this lesson as to leave not the least doubt of their being nothing more nor less than "variations" differentiating only in the arrangement of the same fundamental lines.

The main lines, that is, the most important, are the level lines on plan, and on the wreath plans, designated

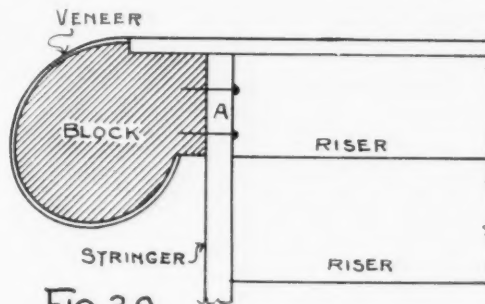


FIG. 30.

Plan of the Curtail Step.

in these figures by the numbers 1-2-3. Every system is fundamentally based on some arrangement to find the correct direction of these lines and for this reason they are often called "Directing Ordinates."

Whether the face mould is to be laid out by ordinates as in the figures we have used so far, it matters not, the finding of the directing ordinates will be quite as necessary if by any other method. For instance, when laid out by the elliptical method, the axes of the ellipse will have to be found and the only known way to find them is by first finding a directing ordinate to give the correct direction to the minor axis, which is but an ordinate drawn from the center of the ellipse the face mould is a part of. Trusting these remarks will have the effect intended to emphasize the importance of these lines, we will now conclude this lesson with a few words in regard to the curtail step.

In Fig. 30, is shown its plan composed of the solid block to support the veneered riser and the stringer, the last shown at A screwed to the block.

Fig. 31 gives an idea of it after it is put together, the view being of its underside showing all its assembling members so clearly as to eliminate the need of further comment.

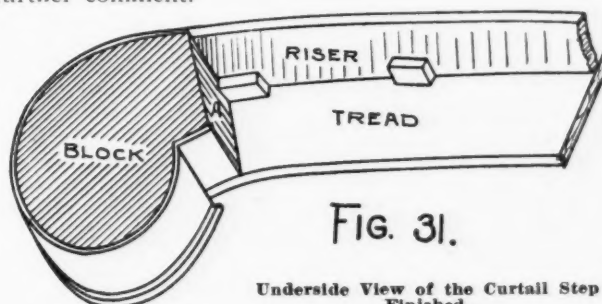


FIG. 31.

Underside View of the Curtail Step Finished.



How to Build a Grandfather's Clock

WORKING DRAWING AND DETAILED DIRECTIONS FOR MAKING THIS VERY POPULAR PIECE OF FURNITURE—PHOTO SHOWS FINISHED APPEARANCE.

By Wm. Cowperthwaite

Instructor in Manual Training, Northeast High School, Philadelphia, Pa.

THERE is no piece of furniture that is more acceptable in the home of the rich or the poor than the "Grandfather's clock."

Made of mahogany and stained a deep dark tone, it will go with any interior finish or style of furniture.

Works may be obtained ranging in prices to suit the pocketbook—from the "hour and half hour strike" to the "cathedral chimes."

Amateurs will find it a pleasure in building something of this kind, and will not only have something of value, but will have a useful article that will last them a lifetime.

Carpenters will find a source of profit in building grandfather's clocks during their spare time in winter.

The drawings and explanations given should be gone over very carefully before starting the work. The sizes given in the stock schedule are nearly all finished sizes.

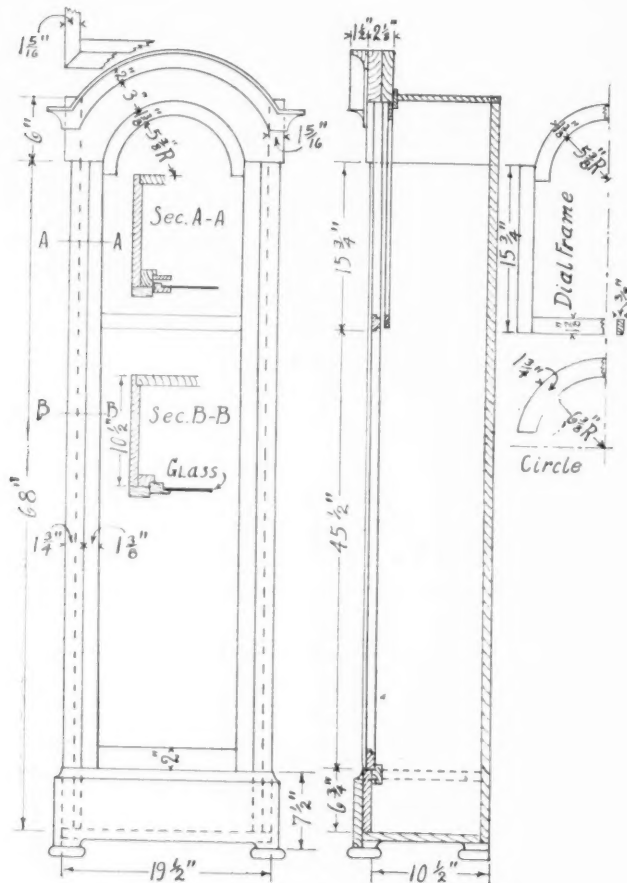
Waist sides should be planed straight and square to a length of 68 inches and width of $10\frac{1}{2}$ inches.

Pilasters are 68 inches by $1\frac{3}{4}$ inches, planed straight and square, glued to the waist sides as seen in sections AA and BB; use lots of clamps, and see that the joints are up good and tight before gluing. Rabbit out the back edge of each side to allow the back to be set in.

The lower front rail is 16 inches by $6\frac{3}{4}$ inches. This is made of poplar with the top edge of mahogany. Dowel the rail to the sides with two dowels in each end. Use a screw between the dowels to draw the rail up to the pilaster.

The base may now be moulded on the upper edge and scalloped on the lower. Glue and screw around the waist sides. Miter the front piece first, glue that in place and fit the side returns to it. Size the miter joints before gluing. The bottom, made of poplar, should now be screwed in place, as it will help to strengthen the base. See that everything is straight, plumb and square. Screw a strip across the top on the inside of the pilasters to hold the sides temporarily until the hood is fastened in place.

The hood front should be made up of two pieces, the front of mahogany $20\frac{1}{2}$ inches by $10\frac{1}{2}$ inches by $1\frac{5}{16}$ inches; the second of poplar. This piece should be as long as the distance between the waist sides on the inside, $10\frac{1}{2}$ inches wide, $13/16$ -inch thick, and must be square on the end, not mitered. Miter the front piece and glue on the second. Miter and fit the hood returns, which are $11\frac{7}{8}$ inches by 6 inches by $1\frac{5}{16}$ inches. Rabbit out the top and back edges for the top and back to set in. Lay off the $6\frac{3}{4}$ and $11\frac{3}{4}$ circles, bandsaw to the line and smooth up with a sharp spokeshave.



Working Drawing of Grandfather's Clock.

Care should be taken in clamping the hood returns to the front, not to draw too hard on the clamps, as the circle may be contracted and held there after the glue has hardened. Size all miter points before gluing. The hood or arch moulding is to be laid out on a piece 24 inches by 8 inches by $1\frac{1}{2}$ inches, and moulded at the mill. The returns may be worked in one piece 28 inches by 2 inches by $1\frac{1}{2}$ inches.

The front moulding should be mitered and glued in place.

Care should be taken to have everything square and all joints tight, as any imperfection will show up badly.

Dowel the hood to the waist sides and fasten with hooks, so that the hood may be removed to place the works in position. The door is to have all joints strongly mortised, the tenons should not go all the way thru the stiles, as they would not look well exposed.

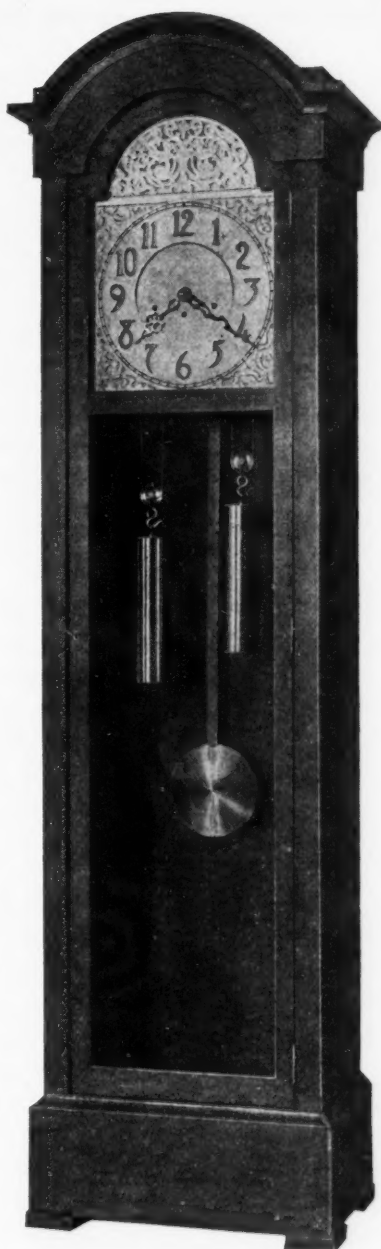
Rebate the inside edge of the door for the glass. The arch rail should be cut at the mill.

In gluing and clamping the door, have it on a level surface to avoid having a twist in it, and be sure that it is square. The door sits back from the pilasters $\frac{3}{8}$ of an inch, and three extra wide hinges should be used to swing it clear of the hood and pilasters.

Rabbit strips should be screwed on the inside of the pilasters to allow the door to shut against—two on the sides from the middle rail down (see sec. BB), and one across the bottom; two on the sides from the middle rail up for the dial frame to rest against (see AA); the arch circle furnishing around the arch.

The dial frame is intended to hold the dial and should fit the hood and sides neatly. The joints should be strongly mortised. The back may be made of poplar and either paneled or in one piece. Panelling is to be preferred as it takes care of the expansion and contraction. In panelling make the lower panel extend to the middle rail of the door. The top and back should be screwed in, not glued.

Finishing—Scrape well with a sharp cabinet scraper and sandpaper with the grain, using No. 1 and 0 sandpaper. Be careful to select a good mahogany stain, only a penetrating or water stain should be used. Do not use stain that contains varnish. After scraping



The Grandfathers Clock Completed. Size of Case, 7 ft. 2 in. high; 22 in. wide; $12\frac{1}{2}$ in. deep, made of Solid Mahogany.

and sandpapering, sponge the wood lightly with clean hot water containing about a tablespoonful of glue. Allow this to dry about 24 hours, and sandpaper with the grain, using No. 00 sandpaper. This will keep the grain from raising after the stain is applied.

Try staining and filling a piece of mahogany before attempting the clock case, to get the desired shade. After the stain is applied and allowed 24 hours to dry, sandpaper lightly with No. 000 sandpaper, taking care not to cut the stain, after which give a coat of filler. This should be well rubbed off after setting a few minutes. Use a piece of burlap, rubbing across the grain.

Allow the filler to dry for about two days, then sandpaper lightly with 000 sandpaper, clean off with a woolen rag and give a thin coat of orange shellac. This will dry within 24 hours, when it should be sanded with a fine paper and given a coat of the very best cabinet varnish. This should be flowed on with a fine brush and allowed to dry from 4 to 5 days. It may now be rubbed down with fine pumice stone and water; care should be taken not to cut thru the varnish into the bare wood. Clean off with water and, after thoroly dry, give another coat of varnish. Let this dry as before and rub with pumice stone and oil, cleaning and finishing with a soft woolen cloth.

The names of dealers in clock works, parts of clock frames, finishing supplies for this work, and

the needed hardware may be obtained from advertising columns of this paper, or from its publishers.

Stock Schedule

- 2 Waistsides, 68 by $10\frac{1}{2}$ by $13/16$.
- 2 Pilasters, 68 by $1\frac{1}{4}$ by $13/16$.
- 1 Bottom Rail, 16 by $6\frac{1}{4}$ by $13/16$.
- 2 Door stiles, 64 by $1\frac{1}{4}$ by $13/16$.
- 1 Head rail, 15 by 7 by $13/16$.
- 1 Middle rail, 15 by $1\frac{1}{2}$ by $13/16$.
- 1 Bottom rail, 16 by 2 by $13/16$.
- 1 Base, 48 by $7\frac{1}{2}$ by $13/16$.
- 1 Hood front, $20\frac{1}{2}$ by $10\frac{1}{2}$ by $1\frac{5}{16}$.
- 1 Hood front, $17\frac{1}{4}$ by $10\frac{1}{2}$ by $13/16$, poplar.
- 2 Hood Returns, $11\frac{1}{4}$ by 60 by $1\frac{5}{16}$.
- 1 Arch moulding, 24 by 8 by $1\frac{1}{2}$.
- 2 Arch moulding returns, 14 by 2 by $1\frac{1}{2}$.
- 1 Dial Frame (see drawing).
- 2 Rabbit strips, $15\frac{1}{2}$ by $1\frac{1}{4}$ by $1\frac{1}{4}$.
- 2 Rabbit strips, 47 by $1\frac{1}{4}$ by $13/16$.
- 1 Rabbit strip, 20 by $1\frac{1}{4}$ by $13/16$.
- 1 Dial circle (see detail).
- 1 Back, 75 by 19 by $\frac{3}{4}$, poplar.
- 1 Bottom, $19\frac{1}{2}$ by $10\frac{1}{2}$, poplar.
- 1 Top, $18\frac{1}{2}$ by $9\frac{1}{4}$ by $\frac{3}{4}$, poplar.
- 3 special hinges.
- 1 mortise lock.



Noon Hour Talks by the Boss Carpenter

Talk No. 52. Factory Design (Continued)

New Series No. 9

THE BOSS CONTINUES WITH THE GENERAL DESIGN OF THE FRAMING AND FLOORS OF A SMALL FACTORY

"WHEN we stopped last time," said the Boss, "we had found the thickness of the roof planks, size of roof beams and size of roof girders for a small factory, as shown in Fig. 8A and Fig. 9A. A description of the details of the building and the roof and floor loads were given at that time and will be used in this continuation of the previous calculations.

"The next logical step in our figuring is to find the thickness of the floor plank which is to be laid across the beams shown in Fig. 8A, and parallel to the length of the main girders. The spacing between these beams was taken as 4 feet from center of beam to center of beam. If we use as a basis a section of floor 4 feet long, 1 foot wide and t inches thick, bearing a uniformly distributed load of 135 pounds per square foot of floor area (as explained in the previous talk), this piece of floor may be taken as a beam 4 feet in length loaded with $4 \times 1 \times 135 = 540$ pounds of uniformly distributed weight.

"Our formula for the strength of a beam in bending is again

$$\frac{p I}{e} = M = \frac{1}{8} W l$$

as described in the previous talk. Using 1,300 pounds per square inch as a safe working value for "sound" grade of yellow pine and remembering the proper values for I and e for a rectangular cross-section, we have from the above formula—

$$\frac{1,300 \times \frac{1}{12} \times 12 \times t^3}{\frac{1}{2}} = \frac{1}{8} \times 540 \times 4 \times 12$$

Solving, $t^2 = 1.25$
 $t = 1.12$ inches

"This thickness would probably be brought up to $1\frac{5}{8}$ inches, so that material 2 inches thick, surfaced

on two sides might be used. It is poor policy to use rough timber in any place where fire might travel rapidly over a splintered surface. A smooth surface resists the quick action of fire and allows better joints. Tongued and grooved or splined plank should be used for this floor. With the thickness indicated by the answer above, a tongued and grooved floor would be proper.

"To find the size of the floor beams, we will use the same general formula for the strength of a beam in bending, but it will be necessary for us to find new values of the quantities to be supplied in this formula. For instance, p will be 1,600 pounds per square inch, since a better grade of "dense" yellow pine is advisable. W will be equal to $4 \times 18 \times 135$, or, 9,720 pounds of uniformly distributed load. We do not know the width of these beams, nor do we know the depth. This makes it necessary for us to assume a relation between width and depth of cross-section and solve for one of the dimensions. As in the previous talk, we will assume as a start that the beams are one-half as wide as they are deep. Filling in our formula with these values, we have

$$\frac{1,600 \times \frac{1}{12} \times \frac{t}{2} \times t^3}{\frac{t}{2}} = \frac{1}{8} \times 9,720 \times 18 \times 12$$

or, $t^3 = 1,968$

This gives a value of t between 12 and 13 inches. It would probably be better to increase this to 14 inches and use a 6 by 14-inch beam, altho an 8 by 12-inch beam would be sufficient. The 6 by 14-inch beam will be stronger and contain less lumber.

"The maximum deflection in one of these beams is found by the deflection formula,

$$d = \frac{5}{384} \frac{W l^3}{E I}$$

as explained in the previous talk. Filling in this formula with the values used in connection with this beam calculation, we have

$$d = \frac{5 \times 9,720 \times 18 \times 12 \times 18 \times 12 \times 18 \times 12}{384 \times 1,500,000 \times \frac{1}{12} \times 6 \times 14 \times 14 \times 14} = \frac{6}{10} + \text{inches.}$$

Since this value is within the allowable deflection of $\frac{1}{300}$ of the span, or $\frac{1}{30}$ of an inch per foot of length, the 6 by 14-inch beam is suitable for use.

"The main girders support the ends of the floor beams from the floor panels on each side of the girders as explained in connection with the roof calculations of our last talk. Each set of these floor beams in a

16 by 18-foot floor panel brings a load of $\frac{16 \times 18 \times 135}{2}$,

or 19,440 pounds onto the girder. The set of beams in a 16 by 16-foot panel on the other side of the

girder in a similar way brings a load of $\frac{16 \times 16 \times 135}{2}$,

or 17,280 pounds, making a total load of 36,720 pounds on the girder. Altho this load is supported at equally spaced intervals of 4 feet, as shown, the error will not be great if we assume that the load is practically uniformly distributed.

"Applying our formula $\frac{p I}{e} = M$, and assuming a trial width of girder as 14 inches, we have

$$\frac{1,600 \times \frac{1}{12} \times 14 \times t^3}{\frac{t}{2}} = \frac{1}{8} \times 36,720 \times 16 \times 12$$

$$t = 16 \text{ inches (nearly)}$$

This means that we would use girders 14 by 16 inches in cross-section with the 16-inch dimension vertical.

"The maximum deflection in one of the girders will be

$$d = \frac{5 \times 36,720 \times 16 \times 12 \times 16 \times 12 \times 16 \times 12}{384 \times 1,500,000 \times \frac{1}{12} \times 14 \times 16 \times 16 \times 16} = \frac{1}{2} \text{ inch (nearly)}$$

Since this is less than the allowable deflection, the girders are suitable for use.

"The calculation for the thickness of plank floors, size of timber floor beams, and size of timber girders shown above will apply to both the first and second floors of the building. The basement floor may be of concrete, or of creosoted wood blocks laid on a concrete base. This floor will be considered later by itself.

"The heavy plank floors, as shown by the floor plan in Fig. 8A, extend across the width of the building. These planks are laid from center of one beam to the center of another at some distance away. The planks would probably be used in 16-foot lengths in this building. Every sixth or eighth plank would be used as a tie and break joints over another pair of floor beams. The floor planks at the ends of the building should be left out of the floor until the roof is in place and the glazing done. This prevents the wet floors from swelling and pushing on the end walls. The plank floors should be dry and clean before the wearing floors are laid.

"The under plank floor should be covered with two or more layers of waterproof paper or felt laid with joints mopped with tar so as to provide a waterproof layer between the two floors and prevent leakage in case a floor is flooded with water during a fire

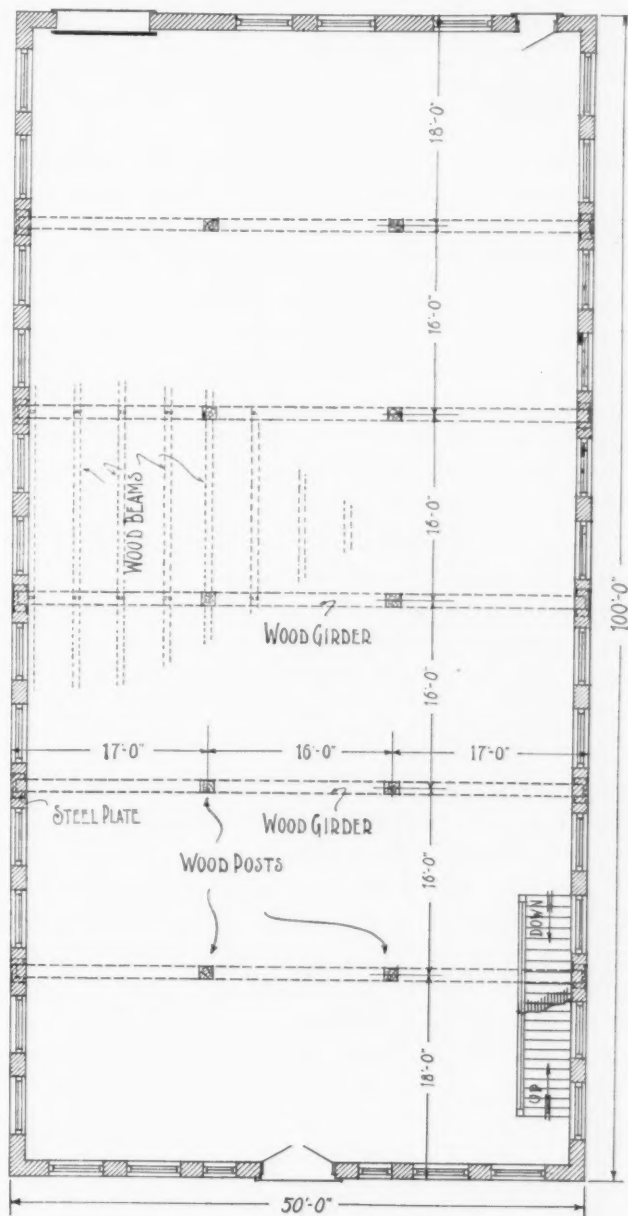


Fig. 9A. Plan Showing Framing of Roof and Floors of Small Factory.



Fig. 9A. Cross-Section Thru Wall and Exterior View of Factory Front.

Care should be taken to see that the paper or felt is well lapped and that the two layers break joints.

"After the waterproofing is in place, a $\frac{7}{8}$ -inch wearing floor should be laid across the direction of the planks of the under floor. This top floor may be of hardwood or edge-grain yellow pine or fir, either dressed and matched or square edge material. While square edge flooring may be replaced easier in case of wear, it is likely to wear uneven around the nails. This floor should not be placed until the building is entirely closed in and dry.

"The waterproofing may be brought up around the side walls and posts, and covered by a base board or large quarter-round. This also allows a certain amount of free space between floors and walls or columns, since the quarter-round covers the space and prevents passage of dirt, fire or water.

"The floor should be given a slant of about 1 inch in 20 feet towards the side of the room where an elevator or stairway is located in order to drain the water from the floor in case it is flooded.

"Another type of floor might have been used in this building with good results. This type is called the "laminated" floor and consists of planks 2 inches or 3 inches in thickness and 6 inches or 8 inches wide set on edge and thoroly spiked or nailed at the ends and at intervals of about 18 inches along the length. Either 40- or 60-penny nails may be used. The length of the planks are such as to extend from center of girder to center of girder direct, thus doing away with the smaller beams used in the design shown above and making the planks run in the other direction in the building. Every sixth or eighth plank on edge

is set to extend across the girders and act as a tie in the floor. The thickness of this floor is found in the same manner as shown above, except that the length of the section taken as one foot wide will be the length between centers of girders.

"Square edge planks with a $\frac{1}{4}$ -inch bevel on all edges are used, the bevel on the lower edges making a finish on the ceiling below.

"Waterproofing and a top or wearing floor are used as in the floor described above. The top floor or wearing surface is laid at right angles to the direction of the planks in the laminated under floor.

"In our next talk," said the Boss, "we will figure the sizes of the posts on both floors and in the basement."



New York to Have Complete Building Show

Arrangements have been completed for holding the next National Complete Building Show in the Grand Central Palace, New York, March 5-11, next year. Among its promoters are several of the men who were chiefly responsible for the great success of the Cleveland show last February.

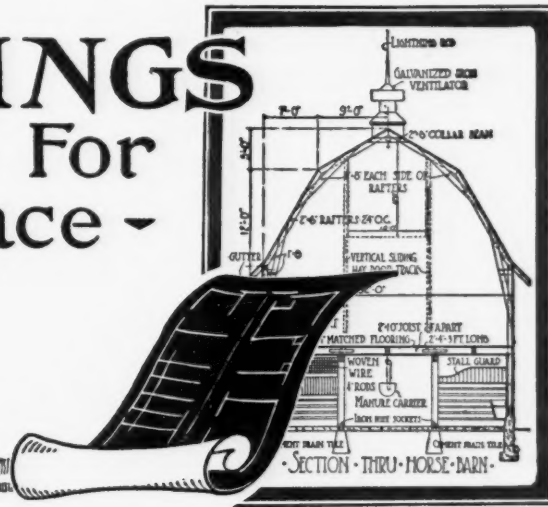
The New York show will naturally be more of a national affair. The metropolis is admittedly the center of American building interest. American building material manufacturers, keenly alert and alive to the fact, are expected to be represented as never before in a similar event.

In the Cleveland show home building and furnishing dominated. At New York it will divide honors with building of the more general sort; commercial, factory, and public. The essentials in each division will be demonstrated. And in such an admirable exhibition place as the Grand Central Palace, there will be ample room adequately to accommodate them all.

Coming right on the eve of the spring building season the show will doubtless arouse and maintain an unusual interest.

FARM BUILDINGS

Arranged For Convenience -



Horse Barn With Concrete Basement

A horse barn designed for a large farm where about a dozen work horses are kept is shown in Design A310.

It is 32 feet in width by 50 feet in length, built of concrete and plank frame construction. The concrete extends up 10 feet above grade to make plenty of headroom in the horse stalls. The walls are made of cement, sand and aggregate in the usual way, filled in between wooden forms. The forms are removed before the concrete has hardened and all crevices, holes and imperfections are filled with rich cement mortar and the whole wall made smooth and clean.

There are five box stalls and three double and three single standing stalls. A room is partitioned off in one corner for a harness room.

Plenty of windows are provided on both sides and at both ends of the building. The windows are not large, but there are a good many of them. Horsemen do not put large windows in a horse stable, because horses are mischievous and are likely to break a pane of glass and possibly get an ugly cut. For this reason horse stable windows often are barred across with round wrought iron bars about $\frac{3}{8}$ of an inch in diameter.

All the standing stalls are floored with plank floors on top of the concrete. These plank floors are given a slight incline towards the back of the stalls. A fall of about an inch is given between the horse's front and back feet, which is considered about right. These plank floors are nailed lightly to a cross piece in front, so they may be easily removed for repairs.

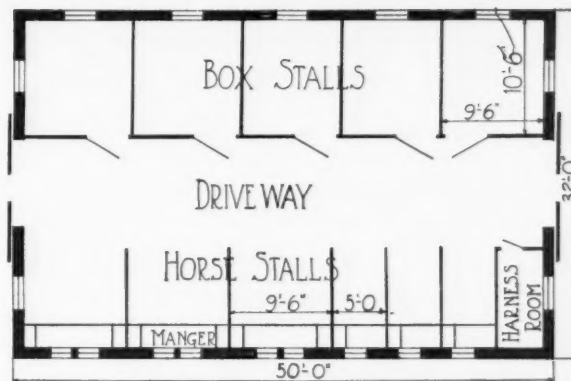
The box stalls are floored with cement and covered with an inch or two of clay. There is straw 6 inches deep above the clay, so the box stalls are very comfortably bedded.

At chore time the manure spreader is driven thru the alley in the center of the horse stable and the manure is

loaded on and hauled out to the field at once.

Double Corn Crib

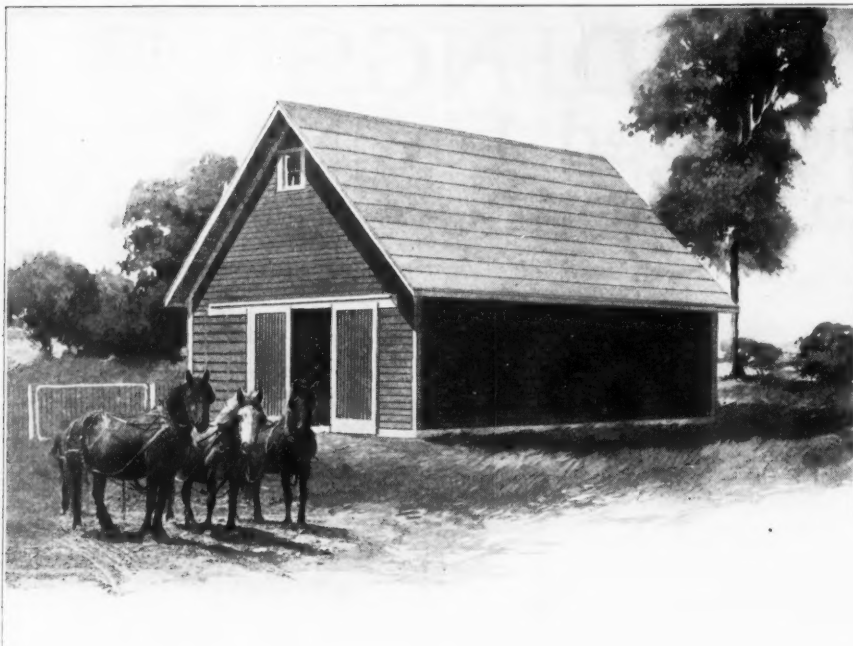
A double corncrib is preferred by some farmers because it seems more convenient to them than the old fashioned single crib or the new modern two-story affair that is filled by means of elevators. Design A334, on the next page, shows a well-built double corn



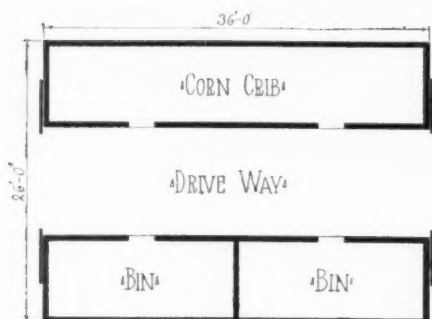
Floor Plan of Barn No. A310.



Horse barn with concrete basement and high gambrel roof. Size, 50 by 32 feet. We can furnish complete set of blueprinted working plans and type-written specifications for only \$7.00 per set. When ordering, ask for Design No. A310.



Inexpensive Corn Crib and Granary, measuring 36 by 26 feet, with driveway thru the middle. Design No. A334.



Floor Plan of Double Corn Crib.

crib with overhead storage for seeds.

To make the crib ratproof the foundation and floor are made of concrete. The concrete floor thru the driveway is made thicker and better surfaced to stand hard usage.

The size of the crib on the ground is 26 by 36 feet. This width gives two cribs, eight feet wide each, and a driveway thru the center 10 feet in width.

The building above the concrete foundation is made of 2x4 studding with wooden slats to hold the corn and to admit a current of air for curing.

There are four doorways opening from the driveway into the cribs. These doorways are filled with boards that slide into grooves. They may be taken out one at a time as the corn lowers.

An important feature of this corn crib is the overhead storage. There is a floor the full size of the building supported by joists, which rest on the plates. The floor starts from the rafters, so there is an air space on both sides for ventilation.

A perpendicular ladder fastened to the

inside partition at the side of the driveway furnishes the means to climb up into the loft thru a trapdoor. This storage room is the best place on the farm to cure seed corn.

There is a window in each gable and the sash is removed in the fall and the corn is placed in wire racks, which are suspended from the rafters. Ventilation up the sides and out thru the gables causes the corn to cure in about the right length of time.

Small, Separate Dairy House

The best dairy practice requires a separate dairy house. The same conditions may be had in a small house as in a large one by building it thoroughly sanitary, so that it may be kept airy and clean.

Design A320 shows a dairy house that is only 10 by 12 feet on the ground, but it is big enough to handle the milk from a good sized dairy herd when the milk is run thru a cream separator and the skimmed milk fed warm to well-bred young stock as quickly as possible after being separated.

There is a good concrete foundation wall and concrete floor made to drain. The floor is made thicker on the engine

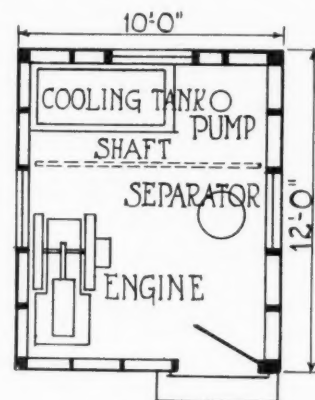
side. Bolts are masoned into the concrete to bolt the engine directly to the floor. If the engine is small it is better to build the engine block up a few inches or a foot from the floor to save stooping in attending to the engine. The object is to make a solid engine bed and to place it right so it may be easily operated and the belt carried directly to the main shaft overhead.

This little dairy house is intended to be placed near the well, so that the pump may be operated inside of the house and the water forced into the tank on the barn or on a derrick near the barn.

In the back end of the little dairy house is a cooling tank, where the cream cans are cooled before shipping.

All the machinery necessary for a dairy house of this kind is the engine, cream separator, pump and cooling tank. The washing of cans and milking utensils requires a small sink, which may be placed in front of the window.

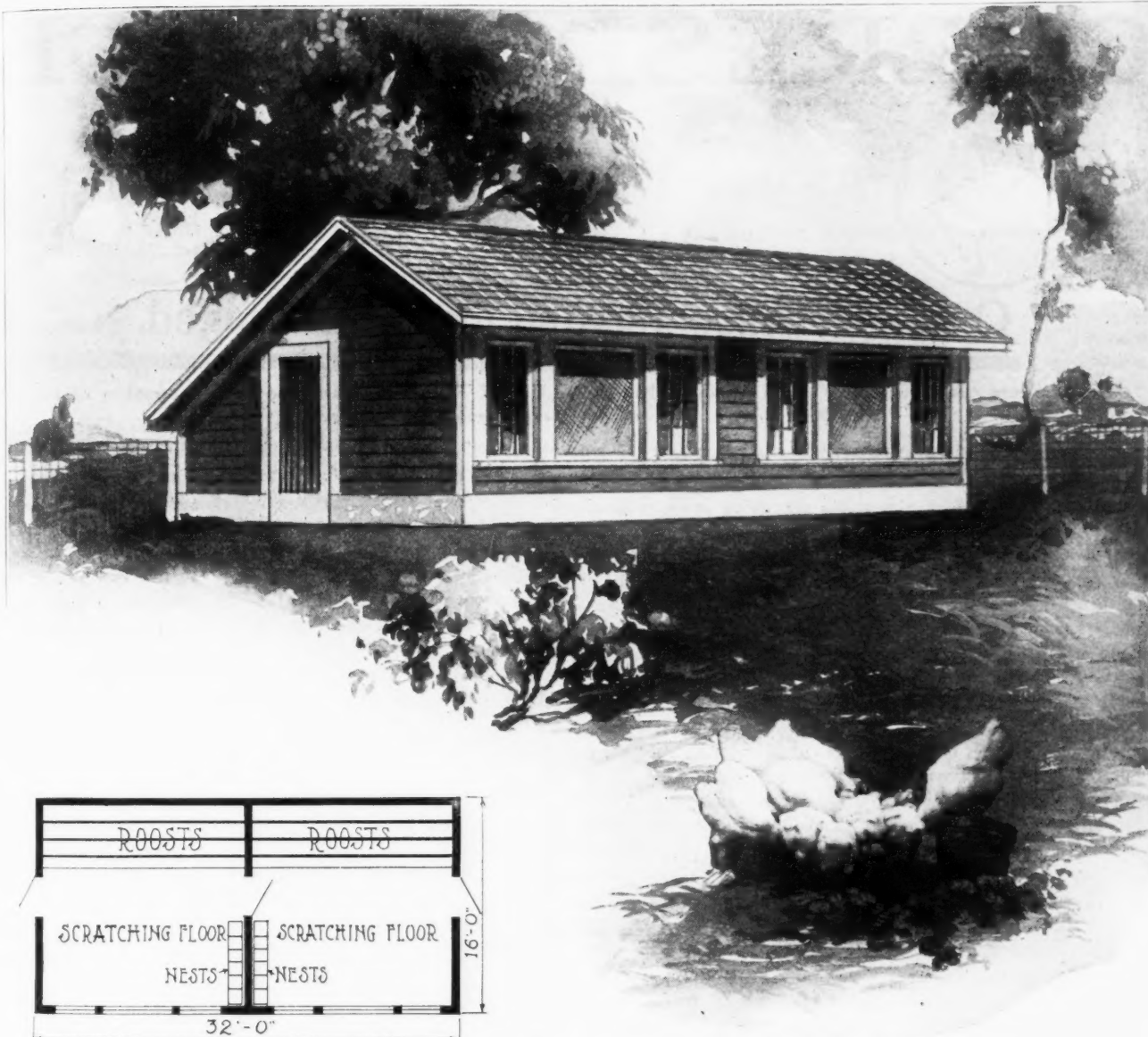
The easiest and best way of starting a farm dairy business is to handle the milk in this way. The cream should be either sent to the city or to the creamery, so the pay checks come in regularly the first of each month. There is very little fertility carried away.



Floor Plan.



Small Dairy House containing gas engine, separator, and cream cooling tank. Design No. A320.



Double Poultry House with modified shed roof. Size, 32 by 16 feet. Design No. A328.

Double Poultry House

A good farm poultry house divided into two compartments is illustrated in Design A328. The size is 32 by 16 feet, with a partition across the center which divides the house into two rooms, giving fifteen feet square of floor space to each room.

The foundation wall is of concrete, which is thoroly well made and extends from below frost to about 18 inches above grade.

The floor in this poultry house is worth careful consideration. After the foundation wall is finished and set, the wooden sills are bolted into place on top of the wall before the floor is made. The floor is a New York state poultryman's invention and it consists of pure lime.

The ground is leveled inside of the walls about even with or a little above the outside grade. After tamping, to make the ground solid, three inches of burned lime is spread over the surface

of the ground and made level. Water is then thrown onto the lime until it slacks and runs together like mortar. Anyone who has had experience in slacking lime can do this job to perfection, so that the lumps melt down into a solid cake with a smooth surface. This surface when dry will crack; these cracks are afterwards filled by washing the floor with thick pasty lime water.

This poultry house provides plenty of floor space for scratching purposes. Grain is fed in the litter, and the hens in scratching for the grain wear holes into the lime floor. As they scratch the particles of lime loose, they get the necessary supply of lime.

The general style of this poultry house was worked out by the American Poultry Association. It is eight feet high to the eaves in front and four feet high to the eaves at the back. The difference is gauged by building a short roof in front and a long roof behind.

Sometimes these houses have the collar beams made quite short. Sometimes they are much longer, which makes a lower ceiling. A good deal depends upon the climate where the house is built. Lower houses are wanted in the north and higher ceilings are wanted where the winter climate is warmer.

The outside and inside of the walls should in every case and in every climate be made as near airtight as possible. A dead air space is the best non-conductor of heat and cold known to the building profession. Laying hens suffer from the heat in summer as well as from cold in winter.

Many good poultrymen cover the poultry house roof with matched boarding and building paper, and then cover the building paper with shingles. They line the sides and the ceiling inside in very much the same way. The result is a poultry house that never freezes in winter and is always cool and comfortable in summer.

CORRESPONDENCE



Questions Answered and Ideas Exchanged.

Our Readers are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders

A Clever Home made Woodworker

To the Editor:

Toronto, Ont., Can.

I show here sketch of a portable rig which saws, rebates, grooves, drills and sands small stuff, invented by my working partner and myself, which we have found invaluable. It does practically all the millwork necessary in a small shop. The bench is framed up of 2 by 4 inch and 4 by 4 inch dovetailed together. The top is 1 1/4-inch pine, with two grooved maple strips set in to guide the cut-off table. Our mandrel is a fixture, so in order to raise or lower the saws, the table top is hinged to the bench with slip pin hinges (so as to be easily removable when sanding and drilling), and is raised by a bench screw set in the opposite side, similar to a drawing table. The sand drum is a wood cylinder made just to take a sheet of sand paper and grooved for a fixing strip. The bearing is a bolt screwed in, cut off, drilled and provided with a set screw to hold drills. This sits in a maple block bolted into the bench and detachable. An adjustable drilling table

fixes to the bench, provided with a sliding carriage as per sketch. The 2 by 4 inch of the cut-off table is grooved on the front edge to receive a stop; clamped with wing bolts. Two strips of hardwood are screwed underneath to run in the grooves in the table top. The running fence clamps with a wing bolt. This rig is run from a 1 H.P. motor and we find no difficulty in resawing 1 by 12 inch cutting from both sides. A box slides under the bench to conveniently remove the saw dust.

On this rig we have made nests of 84 lock-rabbeted drawers 5 by 9 by 15 inches, interchangeable and put together right off the saw.

Hope you will find the sketch and description intelligible and suitable for your valuable publication.

Wishing you every success, I remain,

Yours truly,

FRANK E. BISS.



Finished in 7 1/2 Days

To the Editor:

Kidder, Mo.

I am sending you a little picture of a house that the Hendricks gang built in seven and one-half days. The



John Hendricks and Gang at Work on Residence.

house is 30 ft. by 30 ft. by 14-in. studs, has 22 windows and 3 doors. This picture was taken before the house was finished. We had it completed and ready to move into in that time.

JOHN HENDRICKS.

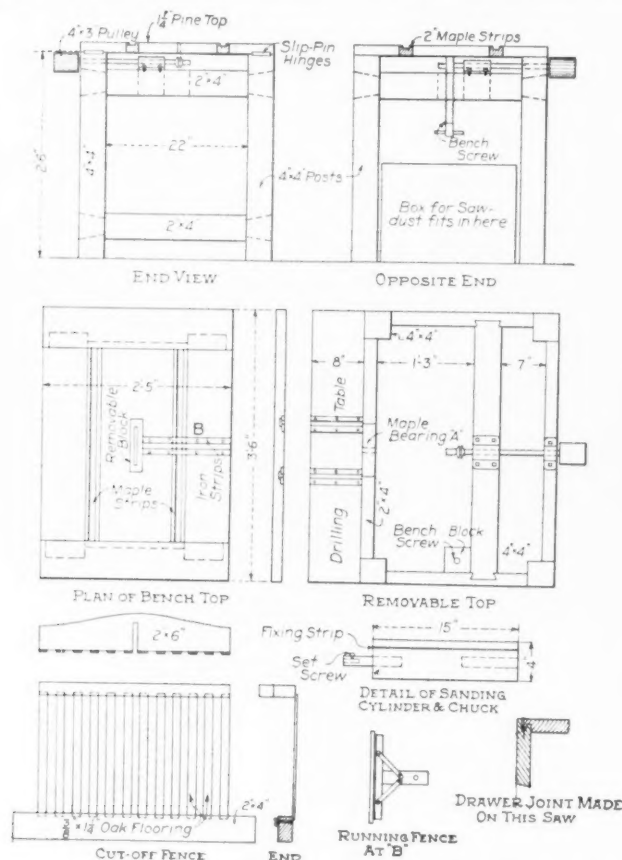


States Requiring Registration of Architects

To the Editor:

El Paso, Ill.

I write to ask if you can give me a list of the states requiring a state examination to practice architecture?



Working Drawing of Woodworker Made by Frank E. Biss.

I feel sure that I have qualified myself by home study to practice architecture, especially on residence work, but I find my ambitions are balked by the fact that I must pass an examination which only the most intelligent student of some state university can pass. From the last reports of the examining board it is very evident that there is an energetic effort being made to regulate the number of practicing architects in this state.

J. A. R.

Answer—The following states require licensing or registering of architects to practice the profession of architecture: Illinois, Northern and Southern Districts of California, Florida, Colorado, Louisiana, Michigan, North Carolina, New Jersey, New York and Utah.

In every case, laws applying to the licensing or registering of architects refers only to those who prepare building plans to be sold on an open market. The laws are not intended to interfere with the legitimate business of the contractor who prepares his own plans. Any building contractor in any of these states may prepare plans so long as they are to be used either by him or under his direct supervision during the construction of the building.

EDITOR.

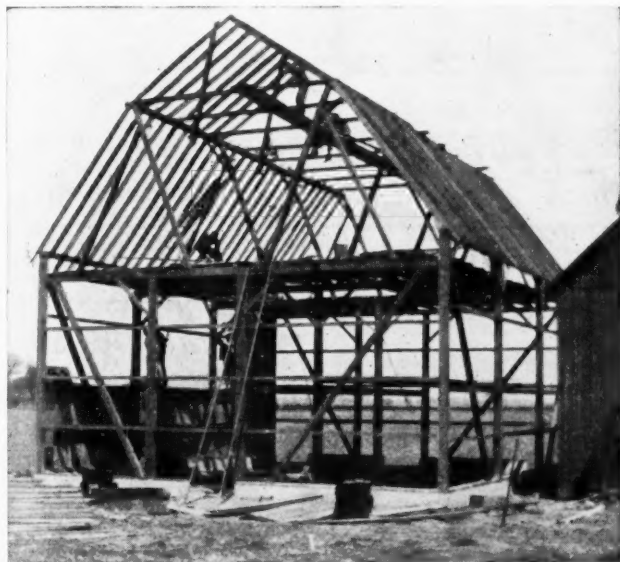


Good Barn Framing

To the Editor:

Orland, Ill.

I send you herewith a photograph of a barn that I built for Chas. Doctor, of Orland, Ill. You will notice that I



Barn Frame by Harry A. Cox, Orland, Ill.

frame in the storm braces different than any that I have seen in your paper. This picture was taken the day we raised the barn.

HARRY A. COX,

Carpenter and Builder.



Interested in Safer Building

To the Editor:

Philadelphia, Pa.

As a subscriber I am much interested and benefitted by your AMERICAN CARPENTER AND BUILDER. If it was in the hands of every woodworker, every superintendent and the numerous inspectors of our cities there would be prevented many accidents caused by lack of practical knowledge in strength of material. Results would be astonishing in saving lives, prevention of large waste and other valuable savings. A thoro knowledge of structural engineering should be requisite before an inspector of buildings is appointed. Do you have a book covering "The Noon Hour Talks by the Boss

Carpenter," a series of strength of materials talk now running in your magazine? I would like a copy.

GEORGE W. BOURNE.

Builder and Real Estate Operator.

Answer—We are considering issuing this series in book form, but as yet have taken no steps toward actually doing this.

EDITOR.



Who Knows About Bake Ovens?

To the Editor:

Springfield, O.

Would like some of the readers who have had experience in the building of bakeovens for a sketch of one burning coke. I have worked on three, but had no chance to see the most complicated and important part of the flues laid out as they were patented ovens and the foreman would not allow us to touch them, he doing this part himself. As I have one to build sometime this fall I will appreciate any sketches, plans or suggestions along this line.

H. E. McCauley



A Roof Truss Problem

To the Editor:

Bridgeport, Conn.

The inclosed sketch shows a common queen-rod truss with a span of 40 feet. Two of these support the roof on a building 40 by 70 feet, and also support the second floor thru the 1½-inch rods a'.

At present there is only 6 feet between the second floor and the bottom of the lower chord of the truss.

Is it possible to raise section AH of the lower chord three feet so that I may have a nine-foot ceiling in a hall extending the full length of the building, or would such a method destroy the truss?

I do not wish to raise the roof. If this method could not be used, can you suggest some other way? Is there any form of steel truss that could be used? It seems to me as tho there should be some method of altering the present truss to accomplish my purpose. Would two diagonal members in the center panel do the trick?

JAMES H. BRUFFEE.

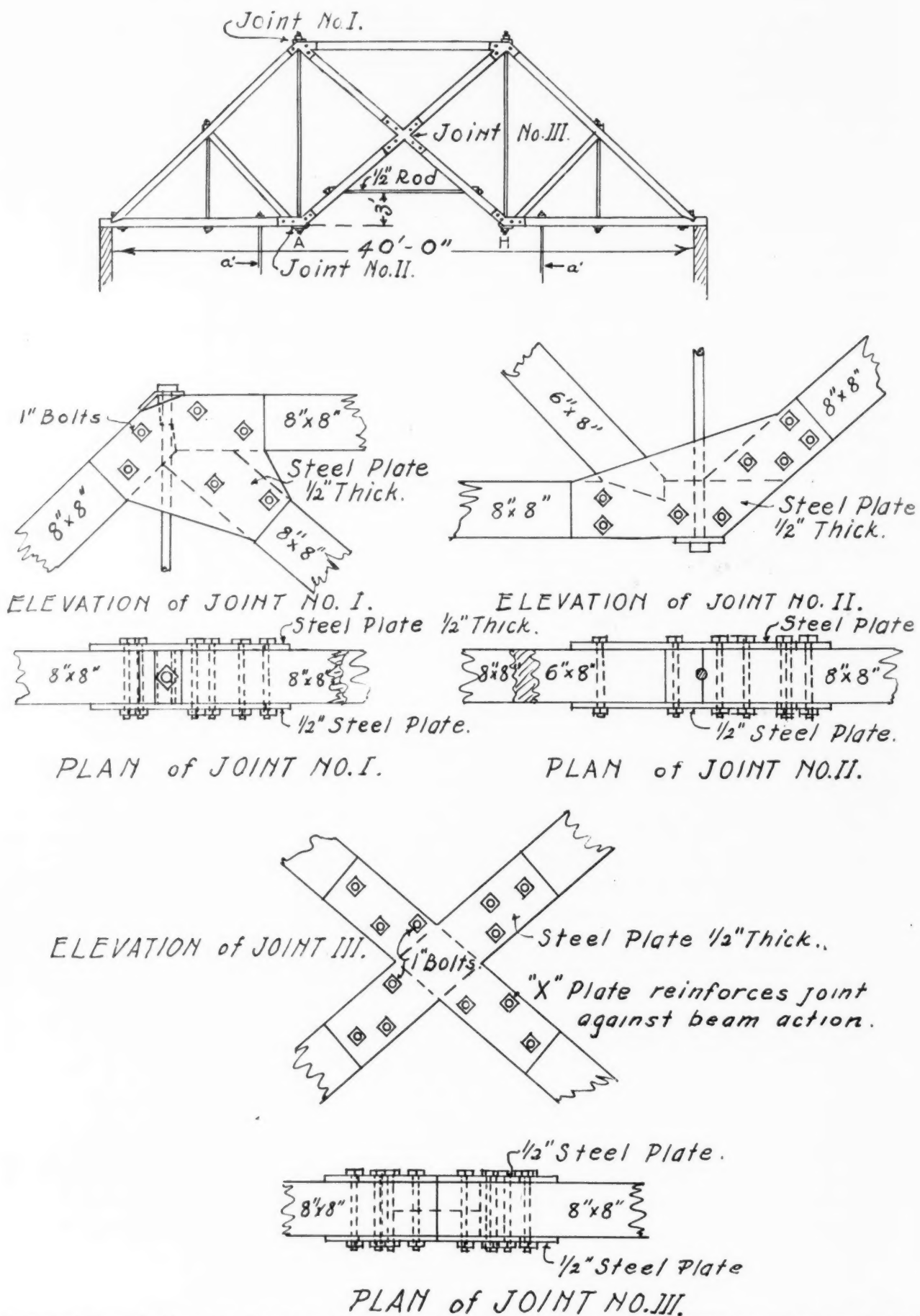
Answer—The most satisfactory method of carrying out the construction of this alteration will consist in one which will not require temporary supporting of the roof and floor while the work is being done. In case new trusses are placed in the building it will, no doubt, be necessary to support the roof and floor, since the trusses should be placed on the pilasters under the old trusses. The scissors type of steel truss would probably be the correct type for replacement, since it would allow plenty of headroom on the second floor for the hall thru the center of the building. If a plastered ceiling is supported by the lower chords of the old trusses, some difficulty may be experienced in making the change.

The detail drawing shows a suggestion for altering the trusses already in place. Since the cross members in the center panel may be installed before the lower chord in this panel is removed, it will not be necessary to support the roof or floor while the work is being done. Joints must be carefully fitted and the 1½-inch rod must be tightened until all stress is taken from the lower chord in the center panel before this member is removed, or settling will occur. Joint III in the altered truss is important, since the 1½-inch rod, being in tension, forces the cross members in the center panel to act as beams between the joints in the lower chord and joint III. Any slippage which might occur at this central joint would change the shape of the entire truss.

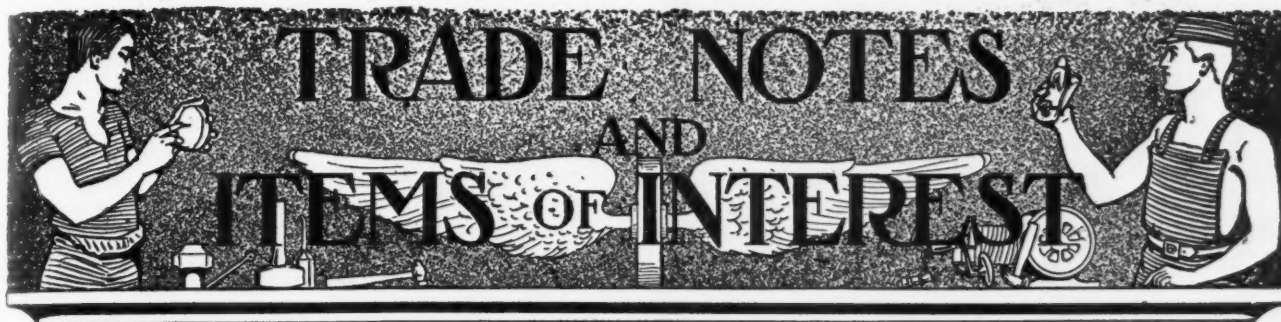
There are probably other methods of handling this problem. Perhaps some reader of the AMERICAN CARPENTER AND BUILDER has been called upon to do work of this nature. Any reader who knows of a method which has been used or can devise one which will accomplish the desired result is invited to send in his suggestion to the Correspondence Department.

EDITOR.

*SUGGESTION FOR ALTERATION ON QUEEN ROD TRUSS
- FOR A 40' FOOT SPAN -*



Mr. Bruffee's Truss Problem. The Lower Chord in the Central Panel May be Removed After the Cross Braces Have Been Installed. Truss Loaded During Operation.



Farm Building Miniatures Show Proper Timber Construction

For these instructive notes and illustrations we are indebted to R. S. Kellogg, Secretary, and E. A. Sterling, Manager, of the Trade Extension Department of the National Lumber Manufacturers' Association. The American Carpenter and Builder is privileged to present this and our readers to have the benefit of it—first. Later it is to appear in about fifty of the leading farm papers and in some carpenter publications to help along the cause of farm building improvements.—Editor.

HOW to build model farm buildings is the problem confronting every man who runs a farm. Voluminous are the publications on this subject, written by architects, agricultural experts, and others. Effective work along this line is now being done by the National Lumber Manufacturers Association, which is having agricultural college experts write special illustrated bulletins on the various buildings on the farm. This work is to supplement their exhibition campaign in which accurately constructed models, built to a scale of one inch to the foot, were exhibited at all the state fairs and personally explained by the men in charge. The illustrations herewith are photographs of these models, and it is expected that this bulletin series will give the information they contain much wider circulation.

The Dairy Barn

The proper construction of dairy and general purpose barns is most important. The picture herewith is described in detail as follows:

A well-built, well-lighted, well-ventilated, and well-planned barn is a necessity on nearly every livestock farm. The cost of the barn may vary, for some farmers will install more elaborate conveniences and pay more for architectural style than will others.

Barns are practically standardized, in regard to framing and interior arrangement. The cost of wood and other materials makes it necessary to make a more careful study if savings are to be made.

Build a barn large enough to meet future needs to permit the handling of the maximum capacity of the farm. If the new barn just holds the stock at time of building, another barn will probably be needed soon.

The location and drainage of the barn are important. The location should be at least 200 feet from the house and handy to a well, sheds and granaries. Drainage is necessary if the stock is to be kept healthy.

Rectangular shaped barns are more satisfactory than round ones. In northern latitudes, the barn should have its length run north and south if the largest possible amount of direct

sunlight is to be let inside.

A ventilation system is required if the animals are kept healthy. It also regulates the temperature and furnishes fresh air.

The barn must be kept clean. The manure can either be removed every day or the stalls bedded heavily and the manure removed every week. It is best to clean out the barn every day.

Gambrel roofs give more room for hay than do the gable roofs. This is an important point to consider.

Concrete is the best product that can be used for the foundation and subfloor of the barn. Sand and gravel are often found on the farm where the barn is built. Concrete must be well mixed and reinforced if it is to give the best of satisfaction.

Creosoted wood blocks make an excellent floor for stables and stalls over concrete subfloor, being permanent and sanitary.

Implement Sheds

The publication on implement sheds, like the others which follow it, goes deeply into the question of how to build build-

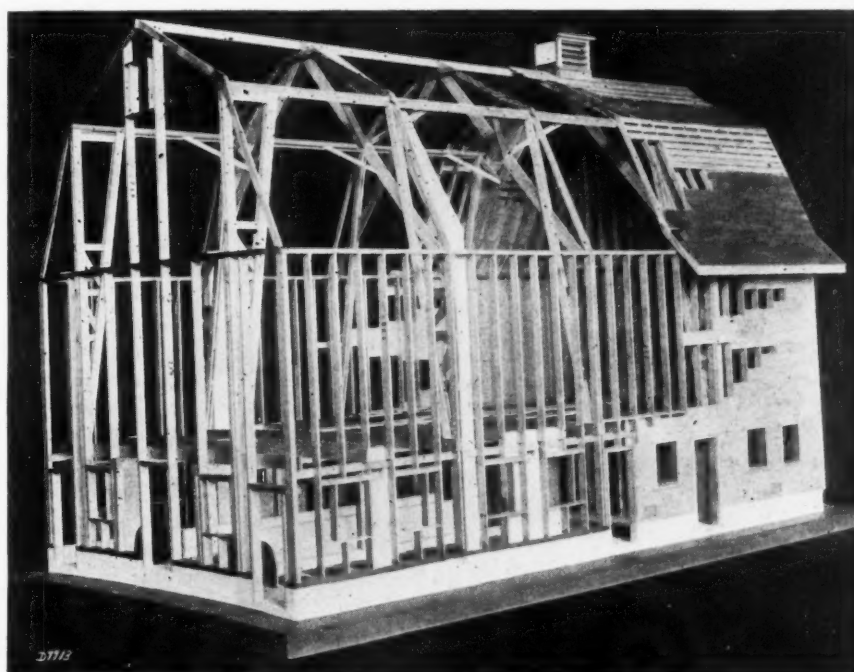


Photo of Exhibition Model of General Farm Barn Showing Plank Frame Construction.

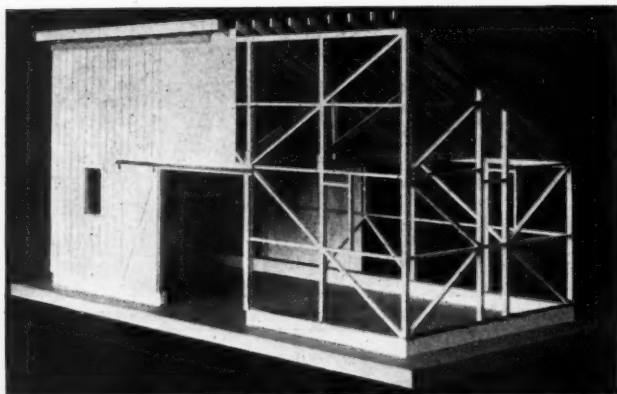


Photo of Exhibition Model of Implement Shed Framed Out of 2x4's, 4x4's and 2x6's.

ings for the farm, of sufficient strength and durability to prove in the highest degree economical for the builder.

The author in addition to his technical suggestions, lays down as a general proposition the advisability of painting the farm buildings, for preservation against weather, insects, or other destructive agencies, as well as to give the farm a prosperous appearance. He says also that an implement shed can be erected in such a manner as to be simple, artistic, and utilitarian.

To take ten years as the average life of farm machinery is certainly to be considered conservative. It is entirely safe to assume that the average length of efficient service can be increased to fifteen years providing proper care is given, and the machinery kept in sheds of proper type. It is almost equally safe to assume that the average life of uncared-for machinery will not be much more than five years.

The needs of the average farm for a cheap, easily built implement shed are met by the simple shed type illustrated in the model. The framing consists of 6 by 6 posts set on a light 1:2½:5 mixture concrete foundation at intervals of eight feet, the plate consisting of two 2 by 6's. Short diagonal braces can be set in underneath between the plate and the post in order to give the plate further support. The rafters for a span of 18 feet should be at least 2 by 6, and better 2 by 8, set not less than two feet apart on centers. The wall covering may consist of vertical siding, either 10 or 12-inch boards, with the cracks covered by ogee battens. Four horizontal siding studs are necessary; these should be 2 by 4's, placed not over three feet apart. Either drop-siding, German

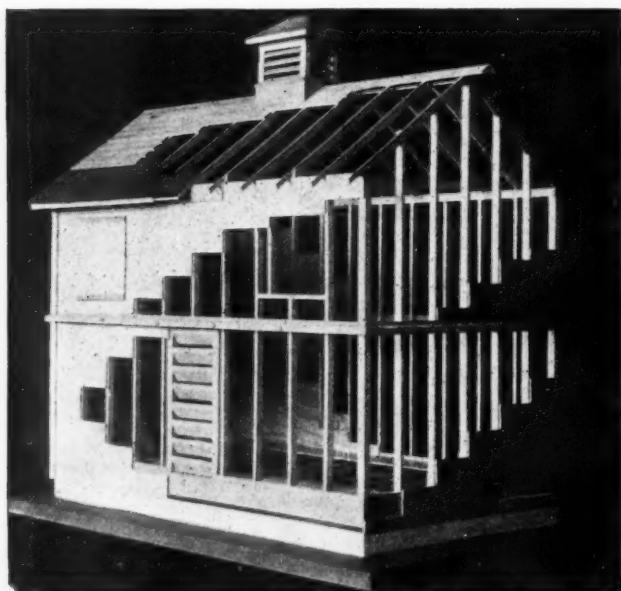


Photo of Exhibition Model of Two-Story Corn Crib and Granary.

or novelty siding or ordinary weather-boarding may be used satisfactorily, but the latter is somewhat light for a building of this kind and would probably not be as durable as the others mentioned.

Corn Crib and Granaries

The chief fault of cribs and granaries as they are built in the majority of instances is that they are constructed with too little regard for strength and durability. False economy is practiced when such a building is erected with just a few stones or an occasional pier for a foundation and with light, unsound timbers for sills and framework. Proper consideration is not given to the great strain to which a crib or bin is subjected due to the lateral pressure from the weight and settling of the grain; this strain is particularly severe at the floor and near the bottom of the walls.

Buildings for the storage of grains are of two kinds, those which are usually styled granaries and which are used for the storage of small grains, and those which are known as cribs and are used almost exclusively for the storage of ear corn. As far as the general design is concerned, principles

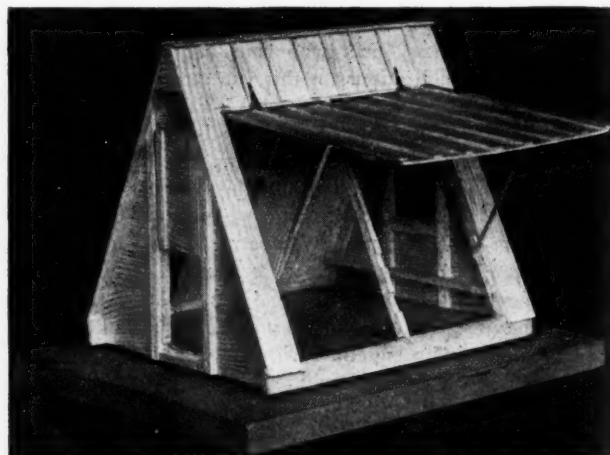


Photo of Exhibition Model of Portable "A" Hog Cot.

which apply to one type will apply equally well to the other. The main differences are: First, that granaries must have tight walls and floors while cribs should have walls with air spaces which permit ventilation; second, cribs must be made narrower than granaries in order to make provision for the removal of the rather considerable amount of moisture which is given off by the drying corn.

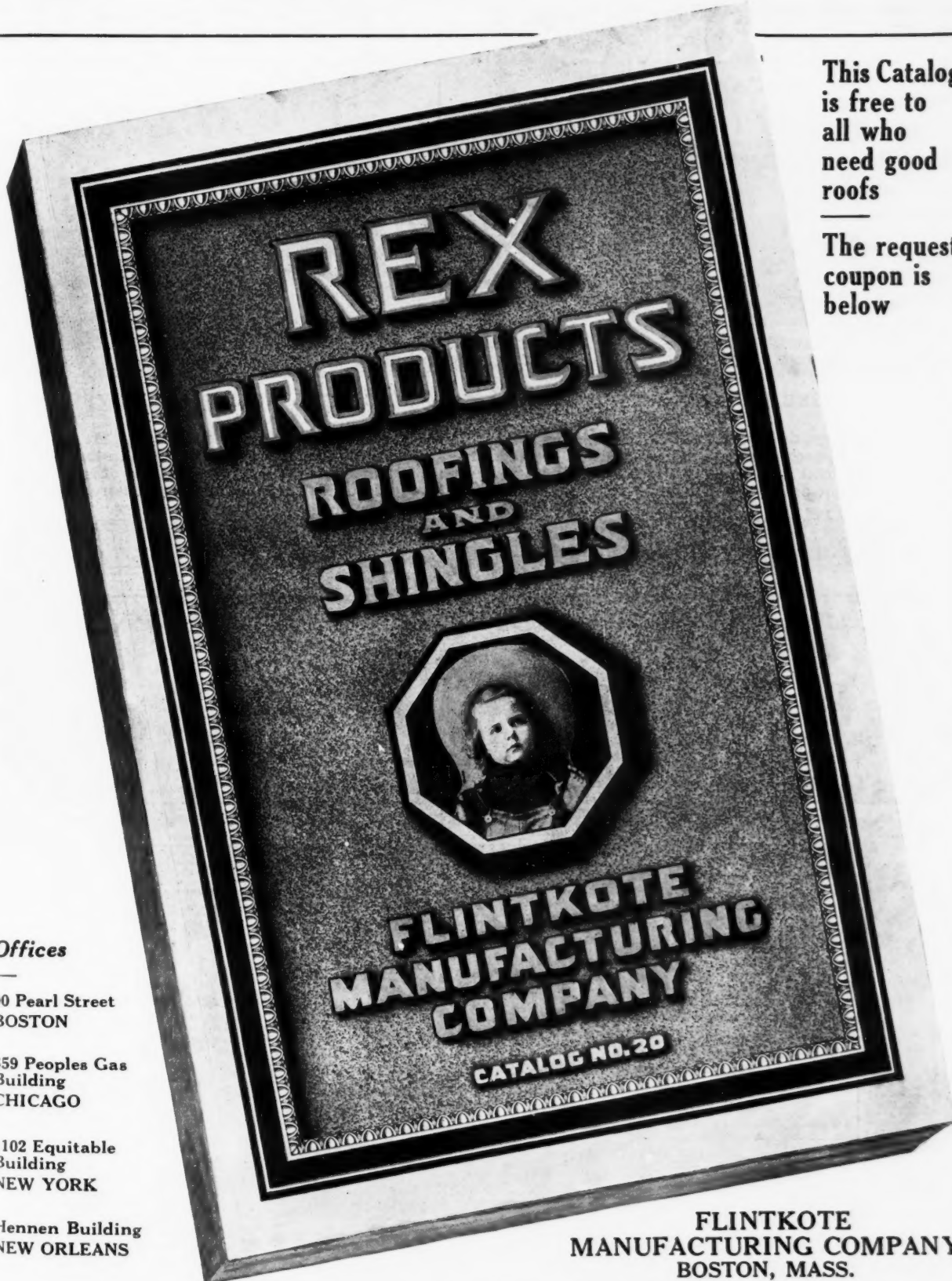
The accompanying illustration is described as follows:

Upon a solid foundation extending around on all sides of the granary are laid 2 by 10's on edges spaced sixteen inches on center, upon which the floor, consisting of match boards, is laid. The studs are placed at intervals of two feet. The plate consists of two 2 by 6's extending all around the building. The rafters are 2 by 4's. Tie rods are placed at the height of six feet from the floor and also just above the plate. In order to prevent the ends of the building from bulging it is necessary to put in ties lengthwise of the building also; these may be either of wood or of iron rods. A 4 by 4 placed as a belt entirely around the building gives added strength and furnishes a bearing for the heads of the tie-rods. A cupola with louvers is part of the building.

Hog Houses

Hog raising has probably returned proportionately greater profits to the corn-belt farmer than any other enterprise. In view of this, it might naturally be expected that the hog be the best housed animal on the farm. In the majority of cases, however, the opposite is true. The old-fashioned idea that the hog is a tough, filthy animal still persists, and many

(Continued to page 94.)



This Catalog
is free to
all who
need good
roofs

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coupon is
below

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Business

MODERN STORE FRONTS

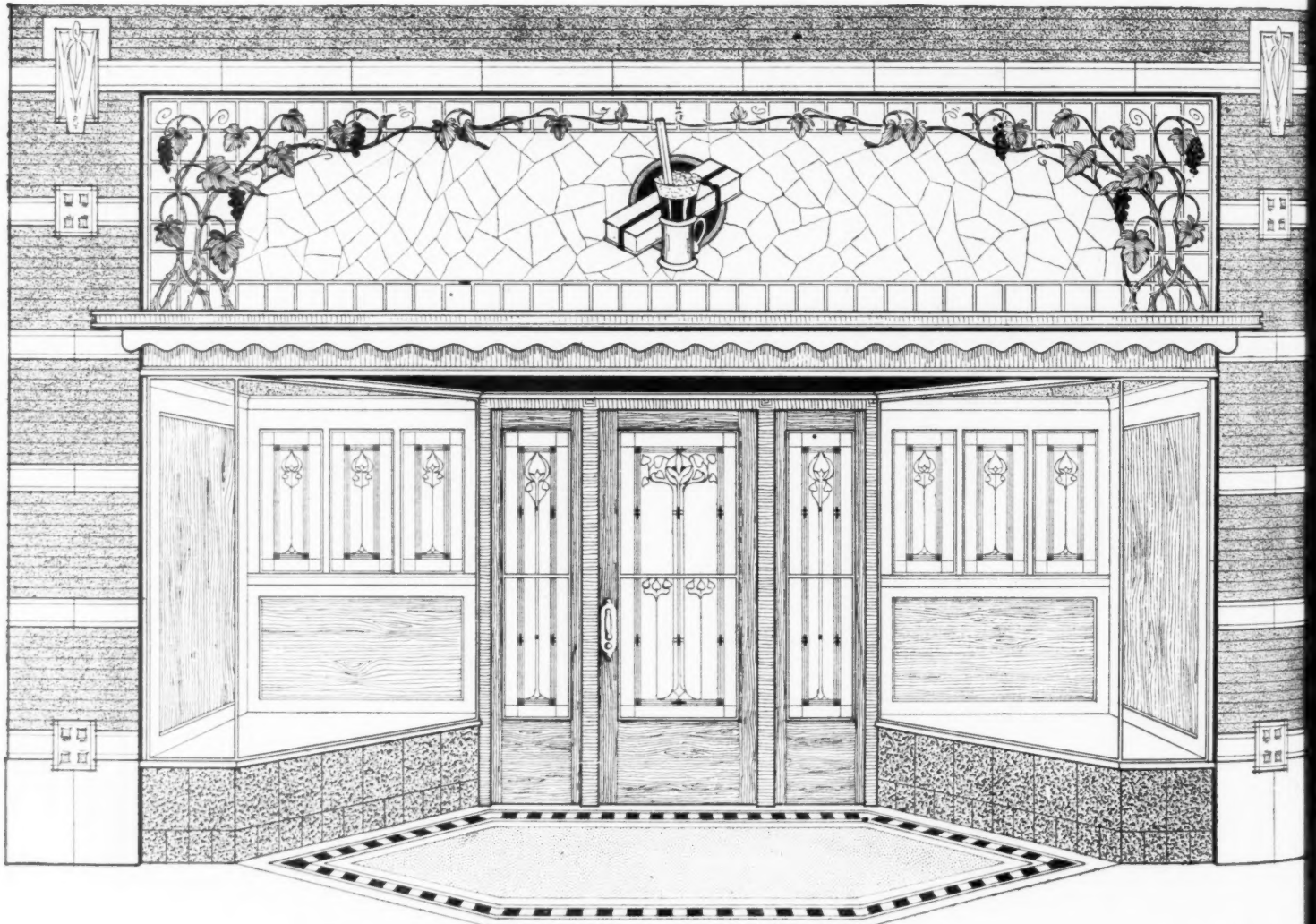
Their Design and Construction

By
Francis J. Plym, President
of KAWNEER MFG. CO., NILES MICH.




IN 17 PARTS, PART 10. (SEE FEBRUARY, MARCH, APRIL, MAY, JUNE, JULY, AUGUST, SEPTEMBER AND OCTOBER ISSUES FOR OTHER DETAILS.)

NOTE: Mr. Plym desires this Department to be of greatest practical benefit to contractors and builders. He will gladly answer letters of inquiry, giving any special store front information desired. He has also prepared a very instructive illustrated booklet on modern store fronts which he will mail free of charge to any architect, contractor or builder desiring a copy. Under this heading is appearing a series of 17 typical store front designs, also a series of 17 plates, of half size details of Kawneer store front construction.



TYPE NO 90

TYPICAL ELEVATION OF CONFECTIONARY STORE

COPYRIGHTED BY
KAWNEER MFG. CO.

A CONFECTIONERY store front must be attractive, individual, and above all give an impression of cleanliness.

In these days of Pure Food Laws, Hygienic Commissions, etc., the buying public is insisting on a high standard for its edibles.

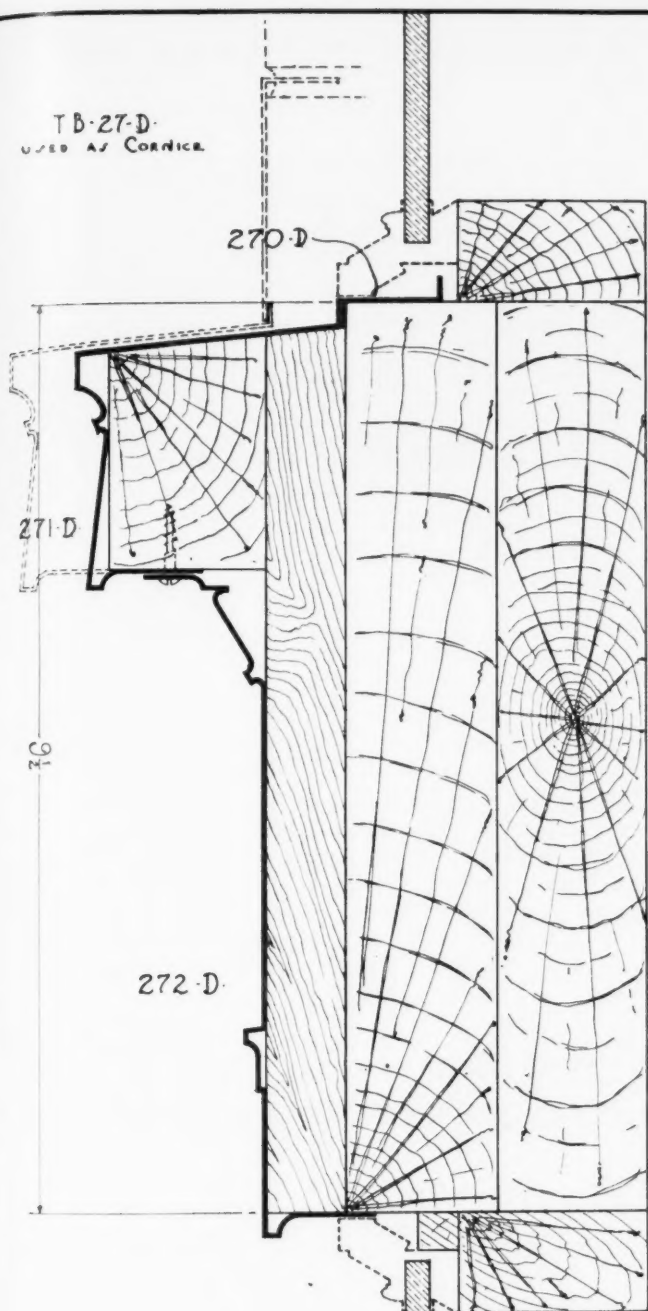
The properly installed metal front is the best way to impress on the passer-by that here is a candy store where sweets, 100 per cent pure, are sold.

The front suggested fairly shouts: Here is a modern, up-to-date candy store where the goods are made under the most sanitary con-

ditions. The art glass sign in the transom, the treatment of the window backs, the bands of white terra cotta in the pilasters, help to produce this effect.

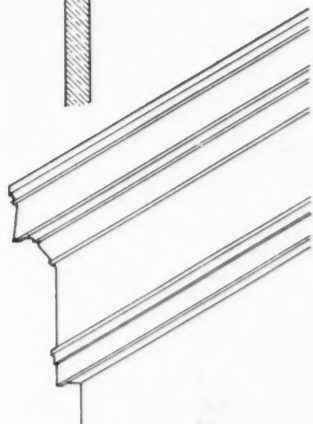
The Kawneer Manufacturing Company will show, each month, an elevation of an "up-to-date" KAWNEER STORE FRONT, designed for some particular line of business.

The details on the opposite page, drawn half full size, show some of the members which constitute KAWNEER STORE FRONT. Readers are asked to cut these out, as they will prove to be a valuable reference asset to them in the future.

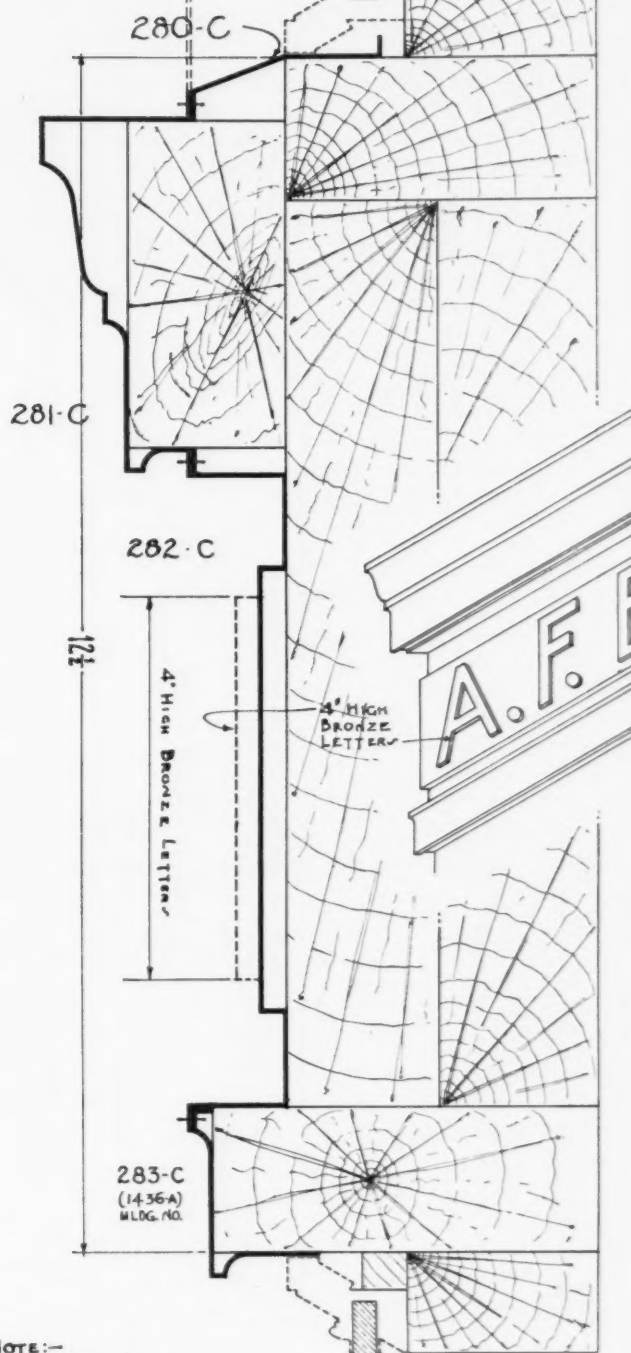


TB-27-D
TRANSOM BAR

NOTE:
TB-27-D & TB-28-C CAN
BE USED AS CORNICE
ABOVE A STORE
FRONT IF WANTED



TB-28-C
USED AS CORNICE



TB-28-C
PANELED
TRANSOM BAR

NOTE:
4\"/>

PLATE No. 10



KAWNEER MFG. CO. ~ NILES MICH.

MANUFACTURERS OF KAWNEER PATENTED STORE FRONT CONSTRUCTION



Kawneer
STORE FRONTS

farmers believe and act in the belief that anything is good enough for a hog. As an actual thing, there is no farm animal that needs care and protection more than the hog. The horse and cow are protected by a heavy coat of hair in the winter time; even the calf or colt will grow a good fur coat when exposed in winter. Chickens have a thick layer of fluffy insulating feathers which keep even their small bodies warm, but the hog has nothing except a sparse coat of stiff hair between his skin and the cold. Little pigs farrowed in cold temperature with no shelter generally die, and even if they live never thrive at all well.

The sixty-eight million swine in the United States on April 1, 1916, had a farm value of \$571,850,000. In number swine exceed any farm animals; in value they are second only to cattle.

The "A" shape, shown in the illustration on page 90, is a type of swine house that is perhaps more widely used than any other, since its construction is very simple. The framing consists of 2 by 4's mounted upon a 1-inch floor nailed to 4 by 4 runners. An end doorway is provided through which the swine may gain access to the interior of the house. On one of the sloping sides are set two doors which open to the side. These may be hinged at the top if desired. One disadvantage of the "A" house is that there is but little choice in the selection of locations for the entrance door. It must necessarily be placed in the lower middle of the end. It is sometimes desirable to make the side doors double, that is, cut in two horizontally in the middle so that the lower portion can be closed.

Poultry Houses

The poultry products of America are equal in value to one-half the entire corn crop of the nation.

Poultry keeping offers opportunities for both pleasure and gain to both sexes, all ages, all walks in life, and in all sections of the country. It may be made a profitable pleasure

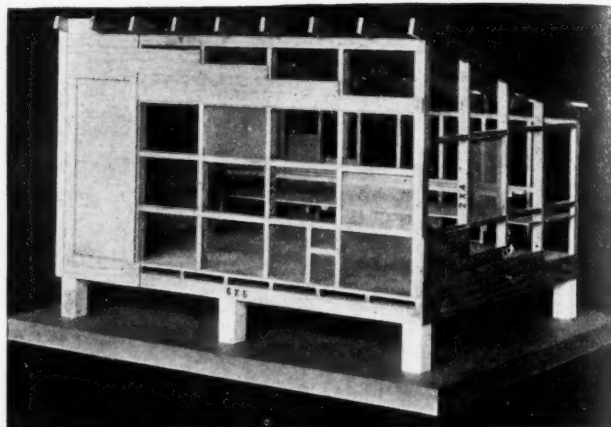


Photo of Exhibition Model of Open Front Poultry House.

alike in the country and in the city. It may be carried on as an exclusive business, or a side line; it can be profitably enjoyed by the poor and rich alike. As an exclusive business it should be carried on in the country; as a side line it may be conducted on a small area of land afforded by a city or suburban home lot.

The poultry and eggs from Ohio are worth more than the combined output of gold and silver from Colorado.

The cost of producing poultry meat per pound is no more than that of producing beef or mutton. Proper housing reduces cost of production.

The old-fashioned closed-type house is a thing of the past. It has been clearly and definitely determined that the open-front type, as it is called, is the type of the future and this style of house in a more or less modified form, is to be found in all parts of the country. The open-front idea (shown

(Continued to page 96.)

CONCRETE FOR PERMANENCE

Get this new business

People who are planning homes or garages will give you the contract, if you show them that Stucco is fire-resisting, warm in winter, cool in summer, adaptable to any design, finish or color—that it is low in first cost and has almost no upkeep cost.

Free book on how to build in stucco

Let us send you our free books on homes and garages, giving practical information and stucco specifications. We will also send you each month our Contractor's Atlas, a monthly publication containing many valuable business-getting suggestions. Use the coupon below.

The Atlas Portland Cement Co.

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"The Standard by which all other makes are measured"

The Atlas Portland Cement Co., 30 Broad St., New York, or Corn Exchange Bank Building, Chicago.

Send me your "Guide to Good Stucco," together with Specifications—also the Contractor's Atlas and special sales information on subjects checked: ☐ New Stucco Homes. ☐ Remodeling in Stucco. ☐ Stucco Garages. ☐ Stucco Bungalows.

Name..... Address.....

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

How many jobs --- this January?

Does your business fall off in Winter? Do you ever need something to fill in? Are you protected against competition? Do your earnings jump ahead every year? Is your future secure? Are you making all the money you want now? Unless you can answer "Yes" to all these questions it may pay you to spend ten minutes considering the Norwalk Vault proposition. For example—

Best Paying Side Line Known.

Twenty manufacturers selected at random from all over the United States report an average production cost of \$9.31 and an average selling cost of \$31.90—indicating a gross profit of \$22.59 per vault, or something like 242 per cent profit. This, however, is a higher rate than we would undertake to guarantee in every case, as overheads, labor and materials vary in different localities. Even so, Chris Abraham, of Capac, writes us: "There is absolutely no comparison in profits. It's the best thing I have."

Grows Steadily Every Year.

Eighteen other manufacturers selected at random report an average of a bit over four years in the Norwalk business—the longest experience quoted, ten years; the shortest, one year and four months—during this time their average gain was 222 per cent, or a jump of around 50 per cent for each year in business. This we regard as conservative; if a man can't grow this fast we'd rather he'd leave the thing alone. But the right sort of men are making the Norwalk lay the foundations of a fortune.

Gets You in on Ground Floor.

During its ten years of business the Norwalk Vault Company has assigned to local manufacturers more than half of the United States and a good part of Canada. The remaining territory is fast being taken. With its own branches in New York, New Jersey and Ohio, and three hundred affiliated local manufacturers, all working to popularize the Norwalk Vault, it is easy to see how the value of a territory jumps every year, like real estate in a growing city.

Absolutely Best of Its Kind.

"The Norwalk is in a class all its own," writes Petrie, of Bloomington. "There is no comparison—we have seen them all," writes Camp, of Columbus. "Best from all points," says Elmore, of Rocky Hill. Cardwell, of Fitzgerald, tells us: "It is the only vault that is what it is guaranteed to be." "Norwalk is in a class of its own," writes Grace, of Logansport. Lyle reports: "Norwalk has practically driven all others out of Philadelphia market." And Berger, of Cobleskill, writes: "Can sell Norwalks at twice the price with less effort."

Sales Can't Fail to Increase.

Nothing is so stable as the annual death rate. Next year or twenty years the average will be about the same. Every year, however, people are awakening to the needs of a more modern method of burial. Ten years ago, when the Norwalk Vault Company just started, the idea of a steel reinforced cement container was practically unknown—now the Norwalk is being preached by the leading undertakers and cemeteries in nearly every big city. Their future is assured.

Little Capital, Small Overheads.

No more territory will be allowed any local manufacturer than he has capital and energy to develop properly—his success is essential to ours. Any respectable shed will serve as a plant, materials are simple and easily obtained. Odd time unskilled labor may be utilized profitably. Neither expensive machinery nor high salaried superintendence necessary; a business that may be opened and closed according to conditions as easily as an umbrella, and—like the umbrella—an ideal side line against a rainy day.

Backed by Reliable Firm.

"Your business dealings have been perfectly satisfactory," volunteers Sherer, of Albany. "Always prompt, courteous and considerate." "In every respect," adds Petrie, of Bloomington, "our dealings have been above the average in courtesies. Recently we asked sixty-five local manufacturers the question: 'Have your dealings with us been satisfactory?' 37 answered simply, 'Yes'; 3 said, 'yes,' with some minor exception; 1 said 'No'; 1 said 'Not entirely'; 13 said, 'Very satisfactory'; 8 'Perfectly satisfactory,' and the other 3, 'Absolutely,' 'Always,' and 'First Class.'"

Strongly Endorsed by Users.

"I find in the vault business more money and less hard work," reports Bullerick, of Westboro. "I can say unhesitatingly and unqualifiedly that the manufacture of these vaults is more productive of profit than any other line of cement work I know of," says West, of Mt. Vernon. "It is a money maker," writes Kuhaupt, of Horicon. "The Norwalk yields more profit for the investment than anything I make," adds Hall, of Eugene. "I know the Norwalk is best of any cement product," says Mehr, of Bunker Hill. Plety, of Bicknell, writes: "Properly developed, the Norwalk has them all beat as a money maker."

If you expect to be overworked in January don't bother with this advertisement. If you are looking for a get-rich-quick scheme don't waste your time or ours. But if you could use a side line that might develop into a big business, it might pay you to find out if your locality is still open. A little capital and a lot of energy will be required. No need to write. A post card saying "send particulars" will suffice. No obligation now or in the future. Address

Norwalk Vault Company, 71 Prospect St., Norwalk, Ohio

None but the Norwalk

THE HAZARD OF RAISED GRAIN

is one which some Architects still use as an argument against any southern pine for white enamel treatment, seemingly because of their belief that all such pine is alike.

Raised grain is a contingency only when the enamel is put upon pine of heavy resinous content which must necessarily be shellaced before the priming coat of lead and oil is applied. When the shellac comes in contact with the resinous surface, an uneven absorption occurs, which causes the grain to raise, resulting in an unsatisfactory effect.

ARKANSAS SOFT PINE

interior trim is virtually free from rosin, has a tough fiber, fine close grain and *does not require preliminary shellacking*. Instead, after proper sanding, the lead and oil priming coat is applied directly to the raw wood, allowing a perfectly even absorption. No raising of the grain occurs. When the enameling is completed, the result is a satin-like surface which will maintain its luster and in every detail satisfy the most exacting client. In addition, this wood is readily obtainable and at moderate cost, due to an abundant supply.

White Enamelled and stained samples on request. Our Architects Manual containing data, finishing specifications, grading rules, etc., will fit your file.

Ask for it.

Arkansas Soft Pine is trade marked, and sold by dealers. Yours can supply it.

ARKANSAS SOFT PINE BUREAU
912 BANK OF COMMERCE BLDG.
LITTLE ROCK, ARKANSAS

Satin-Like



Interior Trim

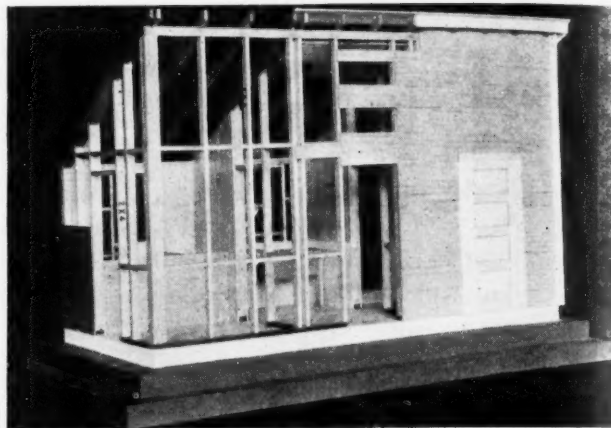


Photo of Exhibition Model of Milk House.

in the accompanying picture), can be applied to houses in which various construction features are incorporated. The colony house, the brooder house, and the permanent house, all can have the open front to advantage.

The open-front house is tightly enclosed on all sides except the south, which should be the front, and this should be partly or completely open to the outside air. This gives free ventilation without drafts. If cold, damp winds are likely to gain access to the house thru these openings, they may be protected by a muslin or cheese cloth shield to break the force of the wind and yet admit the air freely so that circulation is not stopped.

Two general systems of poultry raising are employed, one the intensive type, in which a great number of fowls are forced to rapid development in large houses, and the other the extensive system, in which small buildings and a large range are part of the essential features.

✦ A Winter Work Suggestion

For several years the adaptability of concrete to various uses has been finding expression in a widening field of application and an enormously increased production. Recently methods have been devised whereby concrete work may be carried on safely during cold weather. The indications are that the man who gets into one of the many branches of concrete work will find himself in a field which is progressing in magnitude as the general acknowledgment of the good qualities of the material is taken more and more for granted.

A large number of contractors and builders who are content to stay more or less out of the race during the cold months, handling only the smaller work which comes easily and does not require the use of special equipment, could build up a substantial business in one of the branches of concrete work very easily. There are several manufacturers of equipment used in connection with this class of work who have made it their policy to assist contractors and builders in getting started in a substantial business.

The Automatic Sealing Vault Company of Peru, Ind., have been building up a service which they extend to users of their Bessemer steel burial vault molds. This service offers the beginner in the burial vault business advantage of the wide selling experience of this company.

Concrete vaults made in the molds furnished by this company have been given various tests which have proved their strength and general excellence. Perhaps the most important feature of the molds is the "Automatic Seal" which it produces in the vaults. If properly waterproofed concrete is used in construction, there is no possibility of water entering when the vault is placed in the ground.

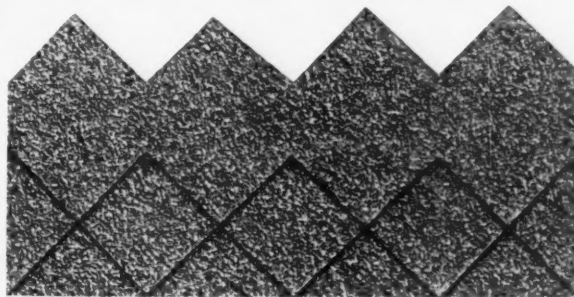
This company supplies all reinforcing materials and other

(Continued to page 98.)

Endurance!

The quality demanded first and foremost in a roof is **endurance**. ¶ The roofs you build must endure extremes of heat and cold. They must endure long spells of drouth, of rain. They must endure—without deteriorating—a constantly varied attack for *years of service*.

It's sound business to put endurance into the roof of a house. A lasting roof is *your* lasting advertisement. That's why thousands of builders are *building their own reputation* by roofing with



*FLEX-A-TILE Diamond Point Slab,
Laid in American Diamond Style*

FLEX-A-TILE Asphalt Slab Shingles



*FLEX-A-TILE Reversible Slab
Laid in American Shingle Style*

The endurance and fadeless beauty of FLEX-A-TILE Shingles is **built into** them by the unequalled Heppes method of manufacture.

Pure wool felt is saturated with twice its weight of high-melt, oil-free asphalt; over this is laid a coating of tough, rubber-like gilsonite, and into this is compressed, under tons of pressure, the beautiful crushed slate or granite surfacing. The result is a shingle that wears like iron—cannot rot, rust, split or curl, and only grows richer in color with age.

SAVE { 50% in Labor
35% in Freight
38% in Nails

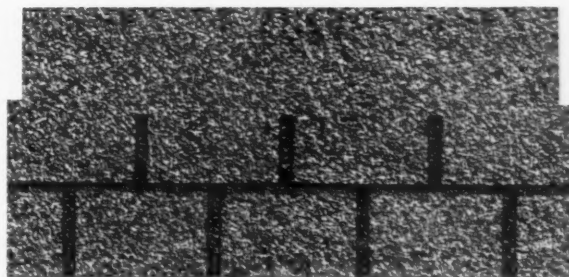
FLEX-A-TILE Slabs are self-spacing—need no chalking. Require only five nails for every slab of four shingles. Their shape means less weight and consequently less freight.

Let Us Send You a Sample

showing the beautiful natural red and green colors of FLEX-A-TILE Shingles. Write, mentioning your business, and we will forward liberal samples, prices and complete information.

More Agents Wanted

Perhaps your locality is still open. We offer agents a most attractive proposition, which is highly profitable to them. Write today and secure the facts.



*FLEX-A-TILE Style 4 Slab
Laid in American Shingle Style*

THE HEPPES COMPANY

Dept. K, 1010 Kilbourne Ave., Chicago, Ill.

Flex-A-Tile Roll Shingle

*Utility Board
Other Guaranteed Heppes Products*

No-Tar Asphalt Paint

articles used in constructing and handling the vaults, and will furnish complete information in regard to the equipment necessary to start a concrete burial vault business. Those who are interested may obtain circulars and any desired information by addressing the Automatic Sealing Vault Company, 27 E. River Street, Peru, Ind.



A Winter Work Answer

It's been proven many times that your best chance for winter work is in "selling something."

Of course, you can always make a living selling aluminum ware or patent mops from door to door, but is that a thing that will lead to the advancement of you as a contractor?

In the *AMERICAN CARPENTER AND BUILDER* for October, 1915 (I believe), a contractor in Missouri gave some very good advice in a prize contest letter.

His advice was:

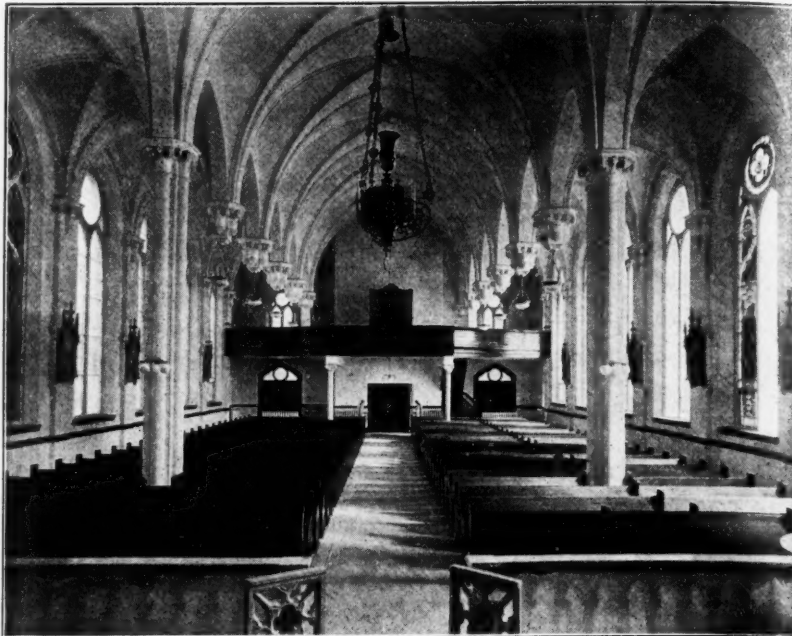
"Sell something that will add to the house—to its comfort or its beauty. If you can, sell something that will 'show up'—a thing that can be pointed to as bought from you (and installed by you)."

The question is, "What?"

One answer is, "Sell Davis acetylene light plants."

Davis plants have been on the market for many years. They won Gold Medals at St. Louis in 1904, and San Francisco in 1915; which speaks well for their quality.

As to the satisfaction given by Davis plants, the manu-



Village Church Attractively Lighted by Davis Acetylene System.

facturers point with pride to their record of fifteen years of satisfactory operation all over the country.

Davis plants are readily installed by anyone who can cut pipe and there is a big profit to you in each sale.

The Davis Acetylene Company, Elkhart, Ind., offer a very interesting proposition to contractors and builders. Write them.

(Trade Notes Department continued to page 104.)

Ideal for Winter Service

Are you going to slacken up on account of winter weather; or are you going to line that garage, remodel an attic, convert a waste-room into a living room or office, etc.—through the use of Roberds Wall-Board?

This Wall-Board offers the greatest resistance to cold. It will not chip, crack or fall off and is guaranteed "Moisture-proof." At just about half the cost of lath and plaster and from 10

to 20 per cent lower in cost than other wallboards, you can build an artistic and pleasing wall-effect that is durable, sound-proof, sanitary, fire-resisting and weather-proof.

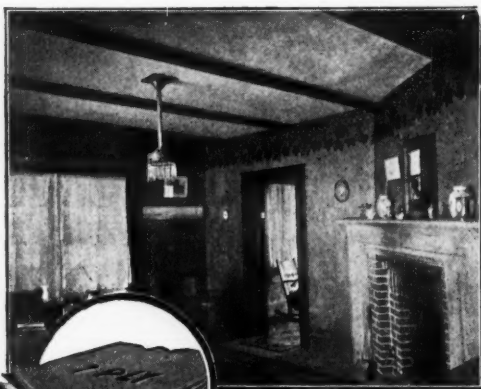
And think of the transformation you can bring about in the way of partitioning rooms, etc. We have a catalog full of pictures showing how attics may be converted into bedrooms, living rooms or dens; how offices may be divided, and many other uses for Roberds Wall-Board.

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— Marion, Ind.



HOW TO READ PLANS

HOW TO READ PLANS

AND

TAKE OFF BILLS OF MATERIAL

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House-Plans and Fifty Full-Page
Details of Construction**

By WM A. RADFORD

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Has Been Entirely Removed
from Blue Prints—See Next Three Pages**

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Partial Table of Contents

Value of Being Able to Read Plans.
What is meant by Floor Plans, Elevations, Sections, Interior and Exterior Details.

How Different Materials are Shown in Sections.
Illustrating wood, stone, concrete, brick, glass, slate, cast-iron, etc.

Reading and Checking Sizes and Dimensions.
Showing how to use $\frac{1}{4}$ -inch, $\frac{1}{8}$ -inch, $\frac{3}{16}$ -inch scale on a plan.

Illustrating How Different Fixtures are Shown on a Plan.
Plan of kitchen, showing chimney, hearth with range, boiler, washtubs, drainboards, sink, pump, dumbwaiter, pantry with shelves. Plan of bathroom, showing bathtub, washbasin, water closet, medicine cabinet and soil pipe. Plan of bedroom, showing bed, radiator or register. Showing how single-swing and double-swing doors are indicated.

Illustrating Difference Between Frame and Masonry Wall.
Plan of a cellar, showing how footings, columns, joists and girders are indicated on a plan.

Giving Complete List of Symbols.
or abbreviations commonly used on plans. For example: O. C., meaning on centre; D. S., meaning double strength; W. I., meaning wrought iron. Illustrations showing how stairs, bookcases, colonnades, cased openings, fireplaces and hearth, buffets, seats, ice boxes, doors, windows, beamed ceilings, single and double sliding doors, floor drains, etc., are indicated on plans.

Chapter on Reading Barn and Outbuilding Plans.
Illustrations showing how horse stalls, cow stalls, box stalls, mangers, gutters, carrier tracks, foul-air shaft, fresh-air inlets, floor drains, dutch doors, sliding doors, feed troughs and guard rail for hog houses, roosts, nests and dropping boards for poultry house are shown on plans.

Taking off a Bill of Materials.

Concrete Work:
Method of figuring number of cubic yards of concrete in footings, foundations, piers, floors, etc. Method of figuring amount of cement, sand, and aggregate in each cubic yard.

Stone Work.
Figured by cubic yards. Amount of mortar required for each cubic yard. Amount of cement and sand in cubic yard of mortar.

Brick Work.
Methods of figuring number of brick in walls, chimneys, fireplaces, cisterns, etc. Amount of sand, cement or lime necessary to lay 1,000 bricks with different thicknesses of joints.

Framing.
Residences.
Rough Lumber.
Methods of figuring number of pieces, sizes and lengths of wall plates, girders, posts, joists, rafters, studs and collar beams. Illustrations showing exact location of each, also safe spacing and sizes of joists for various common spans. How to figure number of feet of roof and box sheathing.

Roof Covering.
Methods of figuring number of shingles required, whether wood, slate, asbestos, asphalt, cement. Also number of sheets of tin roofing. Also number of square feet of tar and gravel roofing. Also figuring tile roofing, prepared roofing, galvanized iron roofing, metal shingles, etc.

Exterior Finish and Millwork.
Method of figuring number of lineal feet of fascia, frieze and porch box, water table, plancier, ceiling, lattice frame, lattice. Also figuring door frames, window frames, crown mould, bed mould, drip cap, cove mould, top and bottom rail, baluster stock, columns, newels, etc.

Interior Trim.
How to figure number and size of door frames, door jams, window frames. Also number and size of all doors and windows, number of feet of wainscot, base, picture mould, mouldings, chair rail, plate rail, ceiling beam. Also how to figure flooring, stairwork, mantels, fireplaces, window seats, sideboards, book cases, colonnades, medicine closets, wardrobes, shelving, etc.

Plastering.
How to figure number of feet of grounds, furring, number of wood lath or square yards of metal lath. Amount of plaster necessary, whether cement or lime, figuring amount of wall board or plaster board.

Painting.
How to arrive at the amount of material necessary for priming and finishing both exterior and interior. Also wood filling, hardwood finishing, varnishing, waxing, staining, bronzing, shellacing, enameling, calcimining, etc.

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TOGETHER WITH A

OF ARCHITECTURAL TERMS

A big, practical, up-to-the-minute book for the Lumberman, Carpenter, Builder, Contractor, Construction Man, Architect, Draftsman, Estimator.

This book contains the latest and most reliable, practical information on original drawings, tracings, blue prints, and rough sketches. It shows how to figure inside and outside dimensions, heights, openings, take off quantities, and a vast amount of other data that is indispensable to the man who has to do in any way with construction or use or estimating of materials.

—In This Big New Book

A Dictionary of Architectural Terms

Included in this book is a Dictionary of Architectural Terms. This appendix is one of the most necessary additions to a builder's or lumberman's knowledge. Many terms are used in architecture which are unfamiliar or not in common use, and when one is met with that is new to the man who is erecting a building or taking off a bill of materials he wonders what it means. By the use of this part of "How to Read Plans" he is able to master any question that may arise, and by getting and keeping posted he has a very advantage over the man who has to guess at the hidden meaning. It is surprising how many words and terms are used in architecture and building that the average builder and lumberman does not know. The purpose of this Dictionary of Architectural Terms is to round out and make complete everything relating to any set of plans, no matter how simple or complicated they may be.

"HOW TO READ PLANS," with its many pages of descriptions, its many illustrations of plans and details of construction, its practical examples of how to take off a bill of materials correctly, its Dictionary of Architectural Terms, and its hundreds of simple money-saving and labor-saving suggestions is a volume that every man in any way engaged in construction or the sale of lumber and building materials needs more than any other book he can buy.

Partial Table of Contents

CONTINUED

Plumbing:

Number and location of bowls, closets, bathtubs, fixtures, catch basins, drain boards, faucets, flanges, floor plates, laundry tubs, grease traps, piping, septic tank, soil pipes, valves, vents, range boiler and stand, sinks, refrigerator, waste, etc.

Sheet Metal Goods:

How to figure number of feet of ridge, roll, valley tin, eaves trough, conductor pipe. Also number of drop outlets, end caps, elbows.

Builders' Hardware:

How to figure number of door-lock sets, sash locks, sash lifts, sash fasteners, butts, hinges, base knobs, coat and hat hooks, sash weights and balances, bundles of sash cord, chains, etc.

Checking List for Estimating.

Standard Carpentry Construction.

Giving detailed information where plans are not complete.

Detail Plates Illustrating Standard Practice:

For the construction and finish of all usual types of buildings.

A Home Building Project from A to Z.

How to Purchase a House and Lot.

Advantages of Careful study before building—Selecting the right plot of ground—Provision for sewerage—Character of Building Site—Explanation of a "Contract of Sale"—Closing the Purchasing deal.

How to Finance a Home Building Project.

Explanation of "Purchase Money Mortgage"—Explanation of "Building Loan" and How to Apply for Same—Explanation of "Permanent Mortgage"—How to Work Out and Finance a Home Building Operation (with Example).

How to Understand a Building Plan.

Architectural Conventions Fully Explained as Used on Working Scale Drawings—Typical Floor Plans Presented, with Reasons for the Various Arrangements.

House Planning to Save Waste.

How to Utilize Excavated Sand and Gravel—How to Build to Sizes of Timber—Saving the Waste of Framing Timber—Pointers on Economical Construction.

Handling Construction Contracts to Advantage.

How to Classify the Millwork—Planning the Stair Case—Explanation of Stock Millwork—Separating the Contracts for the Various Trades.

Payments to Contractor—General Contract Provisions.

Installment Payments on Contract as Work Progresses—Some Terms Defined—General Conditions—Bond and Insurance.

Explanation of Specification Provisions—Mason's Specifications.

Excavating—Brick and Stone Masonry—Foundations and Footings—Stucco—Plastering—Tile Work.

Explanation of Specification Provisions—Rough Carpentry Work.

The Wood Frame of the Building—Rough Lumber Construction—Summary of Ordinary Timber Sizes.

Explanation of Specification Provisions—Carpentry Finish.

Exterior Millwork—Interior Millwork—Flooring—Doors and Windows—Glass, Stair Case Work—Miscellaneous Finish.

Explanation of Specification Provisions—Hardware and Heating.

Finish Hardware—Metal Work—Hot Air Heating Plant—Steam and Hot Water Heating Plant—How to Figure Amount of Radiation Required.

Plumbing and Electric Wiring Principles Explained.

General Instructions for the Installation of Plumbing—Selecting Plumbing Fixtures—General Instructions for Installing Electric Wiring—Best Arrangement for Lighting—Selecting Gas and Electric Fixtures.

Painting and Finishing the New Home.

General Directions for Painting and Interior Finishing—Decorating. General Summary.

Useful Estimating Data.

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The architects like them, the customers like them. It does me good to walk around and look at those fine looking Neponset roofs—my roofs—and to know that several thicknesses of Paroid weather-proof roofing are protecting my customers from storm, sun and fire. Neponset Shingles are made in red, gray and green.

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in the beautiful new Quartered Oak finish need only to be shown to get you lots of wainscoting jobs.

It is waterproof—can be cleaned with a damp cloth—it is six-ply and rigid—won't warp.

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Norfolk, Virginia



Statement of the Ownership, Management, Circulation, etc., Required by the Act of Congress of August 24, 1912

Of AMERICAN CARPENTER AND BUILDER, published monthly at Chicago, Ill., for October 1, 1916.

State of Illinois, }
County of Cook } ss.

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared E. L. Hatfield, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the AMERICAN CARPENTER AND BUILDER, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, AMERICAN CARPENTER AND BUILDER Co., Chicago, Ill.

Editor, William A. Radford, Chicago, Ill.

Managing Editor, Bernard L. Johnson, Chicago, Ill.

Business Manager, E. L. Hatfield, Chicago, Ill.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

Wm. A. Radford, Congress Hotel, Chicago, Ill.

H. M. Radford, Congress Hotel, Chicago, Ill.

Roland D. Radford and Wm. A. Radford, Jr., Congress Hotel; E. L. Hatfield, 1321 Hood Ave., Chicago; G. W. Ashby, Berwyn, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

There are no bonds, mortgages or other securities outstanding against the AMERICAN CARPENTER AND BUILDER Co.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above, is: (This information is required from daily publications only.)

E. L. HATFIELD,
Business Manager.

Sworn to and subscribed before me this 29th day of September, 1916.

JEANNETTE A. NICHOL.

[SEAL]

(My commission expires July 6, 1919.)

Woods and Their Uses

ALL woods have certain uses for which they are especially adapted by reason of the peculiar qualities and characteristics which nature has given them; and on their proper selection for these uses, hinges the whole problem of economy in wood construction.

Three centuries of experience in this country have demonstrated that no other wood lasts so long or gives such satisfactory service as

WHITE PINE

for outside finish lumber—siding and corner boards; window sash, frames and casings; outside doors, door frames and casings; outside blinds; all exposed porch and balcony lumber; cornice boards, brackets, ornaments and mouldings; and other outside requirements, *not* including shingles.

If the lumber dealers supplying your clients are at any time unable to furnish it, we should appreciate the opportunity of being helpful to you in securing it.

A Free Magazine for Contractors

We are now publishing a bi-monthly architectural magazine, every issue of which is full of valuable and helpful information for contractors and builders. If you would like this magazine, write us and we will be pleased to place your name on our mailing list.

WHITE PINE BUREAU,
2135 Merchants Bank Building, St. Paul, Minn.

Representing
The Northern Pine Manufacturers'
Association of Minnesota, Wisconsin
and Michigan, and The Associated
White Pine Manufacturers of Idaho

Profit in Country Building

Are you "cashing in" on all of the profits available in country building? Many contractors and builders who have established a business in the rural districts do not realize that there are a great many opportunities to obtain substantial profits in addition to those coming out of the erection of the farm buildings themselves. The modern farmer does not live or carry on his business in the manner of his ancestors. He progresses with the times and his methods are often more modern than those of men who do not have as many difficulties to contend with. He reads current literature and he knows about the latest improvements in farm equipment. When he gets ready to take a step in advance—build a new structure or improve an old one, install some new equipment or replace some that is out of date or worn out—he comes to the contractor or builder.

If he has heard that contractor John Smith, in the nearby town, can furnish him information on most any kind of equipment he wants, and can get his improvements installed in short order, John Smith is the man he goes to see.

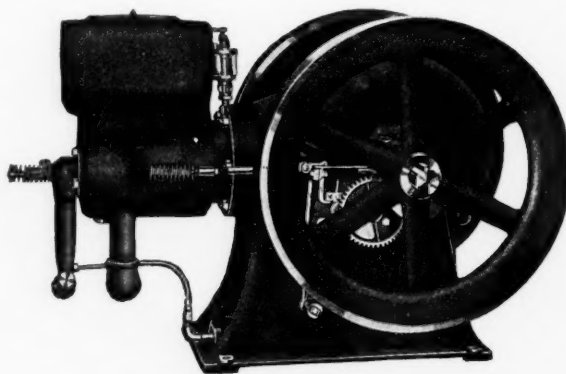
One of the articles which this contractor must be posted on is a good ventilator. All farmers know that ventilation is absolutely necessary in their farm buildings. Farmers who have buildings which are not fitted with ventilators are having them installed. No modern farm buildings worthy of the name are built without ventilators.

An attractive offer to contractors and builders is made by the Phillip Bernard Company, makers of the "O. K." cupola ventilator. Their ventilator is neat in appearance and is bird, storm, rust and rot proof. All the material used, such as bolts, rivets, screen and fittings are rust proof. The cupola is easy to erect and is shipped ready to install. Full particulars in regard to this offer may be obtained by addressing the Phillip Bernard Company, 2400 Floyd Ave., Sioux City, Iowa.

A New Horizontal Engine for the Contractor

Beyond a doubt, the readers of our paper will be pleased to learn that there has been placed on the contractors' market a horizontal engine of up-to-the-minute design that is especially adapted for this class of work.

This new type of horizontal engine is the result of twenty-five years of careful study of the gas engine situation from



The Brownwall Horizontal Gas Engine.

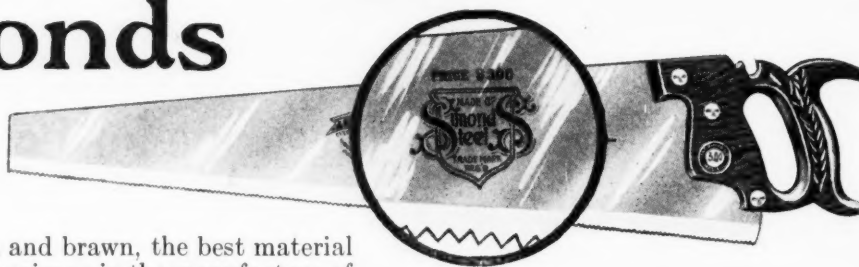
both the factory and field standpoint, so that an engine that will stand up and deliver the power under the most trying conditions has been produced.

In this engine is found every necessary feature for producing the utmost power for length of time without the annoying delays with which everyone is familiar. The engine itself is very compact, taking up little room, which makes it desirable for use on cement mixers and other machines where lack of room is a handicap. The extreme light weight of the outfit makes it very desirable for portable work as

(Continued to page 108.)

—It's enough to say—"It Saws" You don't have to force a Simonds

Through a board—it goes the way you've always wished a saw would go.



That's the result of brain and brawn, the best material and eighty-five years' experience in the manufacture of cutting edge tools. Quality, Temper and Workmanship are backed by our trademark—an absolute guarantee.



"I tell you it's a great saw"

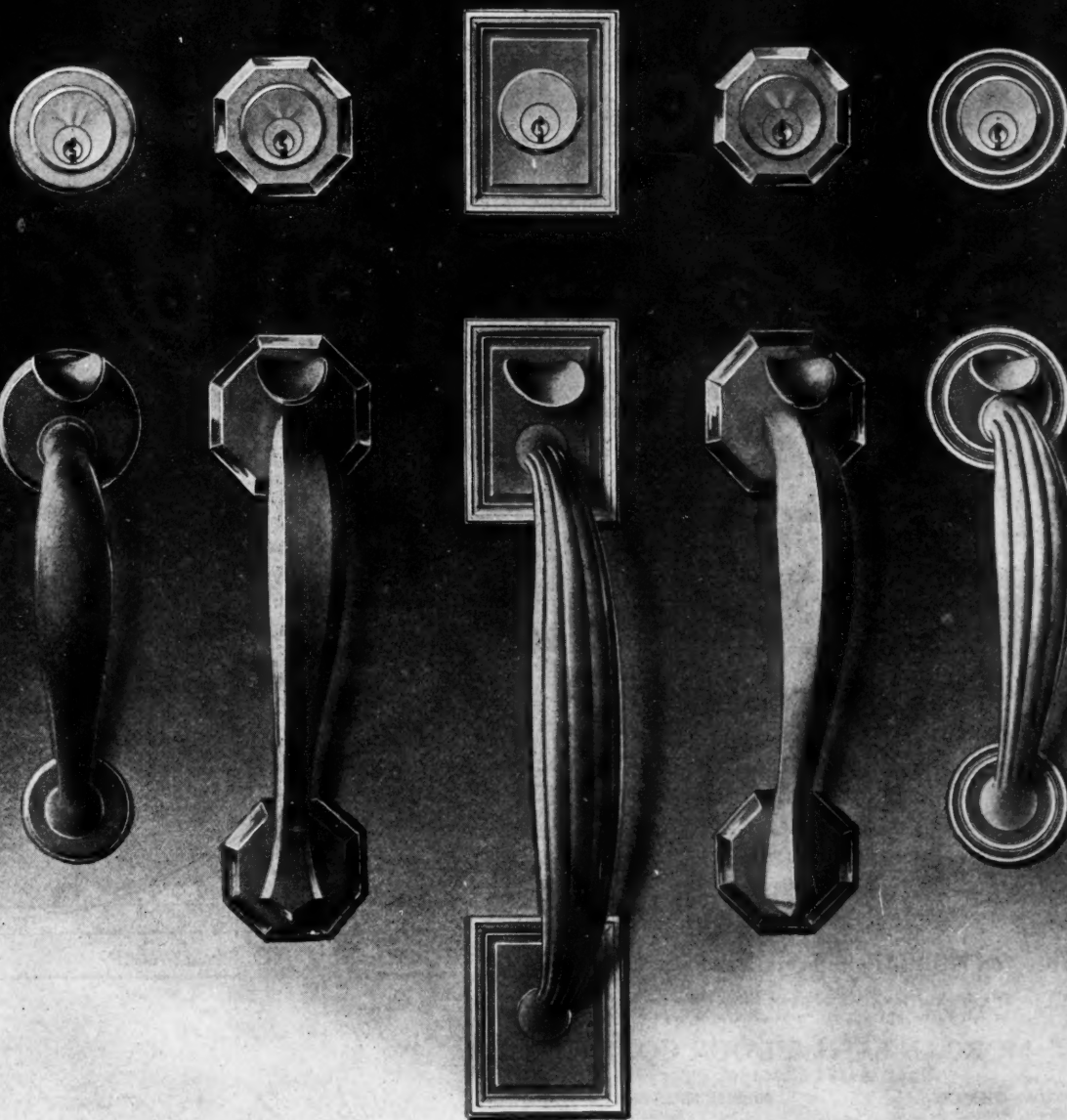
The illustration shows No. 51 No-set Hand Saw, a saw that does not need setting. Cuts free and easy, and absolutely smooth in any kind of dry wood, and is extra ground for clearance. Made only in 26-inch length, ten points to the inch. Sells at your dealers for \$3.00 or sent direct by express paid.

"Simond's Guide" is a booklet full of good solid information on things vital to carpenters, such as rafter framing, paints and varnishes, etc. Send for a copy, it's Free.

Simonds Manufacturing Co.

"The Saw Makers"

FITCHBURG, MASS.



JUST A FEW

Out of a large assortment of door handles to be used with high-grade locks for entrance doors. They are right in line with modern ideas, and sure to please. The most popular trim for residence work. Folder K-82 shows the entire assortment. Sold by the best hardware dealers.

P. & F. CORBIN

The American Hardware Corporation Successor

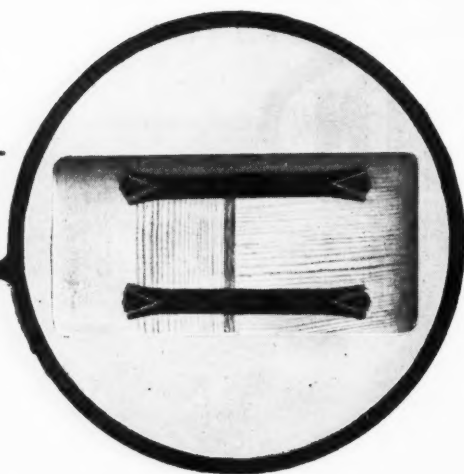
NEW BRITAIN, CONN., U. S. A.

CHICAGO

NEW YORK

PHILADELPHIA

**Morgan
Wedge
Dowel
Construc-
tion**



These Two Features Win Leadership

No hardwood door is as good as it ought to be unless it has:

- (1) Wedge Dowel Construction.
- (2) All White Pine Core.



are the only hardwood doors that have them. That is why MORGAN Doors satisfy customers, save you money and assure a profitable job. Don't waste time and energy with ordinary doors. Install only MORGAN Doors. They cost little if any more — much less in the end.

Write for MORGAN Millwork Handbook FREE

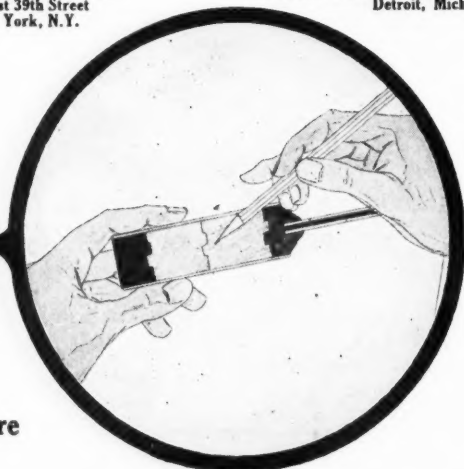
Displays of Finished Morgan Model Doors
In All Principal Cities — Ask Us Where

MORGAN SASH & DOOR CO.
Dept. A-23, Chicago

MORGAN COMPANY
Oshkosh, Wis.
MORGAN COMPANY
6 East 39th Street
New York, N.Y.

MORGAN MILLWORK CO.
Baltimore, Md.
MORGAN SASH & DOOR CO.
Detroit, Mich.

**Morgan
All
White
Pine Core**



the design of the engine has reduced the weight about one hundred pounds per horsepower.

The engine itself is very simple, and therefore can be run by inexperienced operators with great success. The working parts are protected by the inclosed crank case, which is absolutely necessary to prolong the life of the engine, especially around concrete work.

Contractors who desire a medium priced outfit that is guaranteed to give service, will do well to write the Brown-wall Engine & Pulley Co., Holland, Mich., for one of their catalogs.



Office of Slate Company Reopened

The J. Bray Slate Company, of East Bangor, Pa., have reopened their office and are ready to supply high grade roofing and structural slate to former patrons and prospective buyers.



Chemical Closet Firm Wants Agents

The Comfort Chemical Closet Company, 311 Factories Building, Toledo, Ohio, offers carpenters and contractors the opportunity to represent them in connection with their country and small town building season. The chemical closet is a great convenience in communities where a water system is not available. Full particulars in regard to this agency proposition may be obtained from this firm upon application.

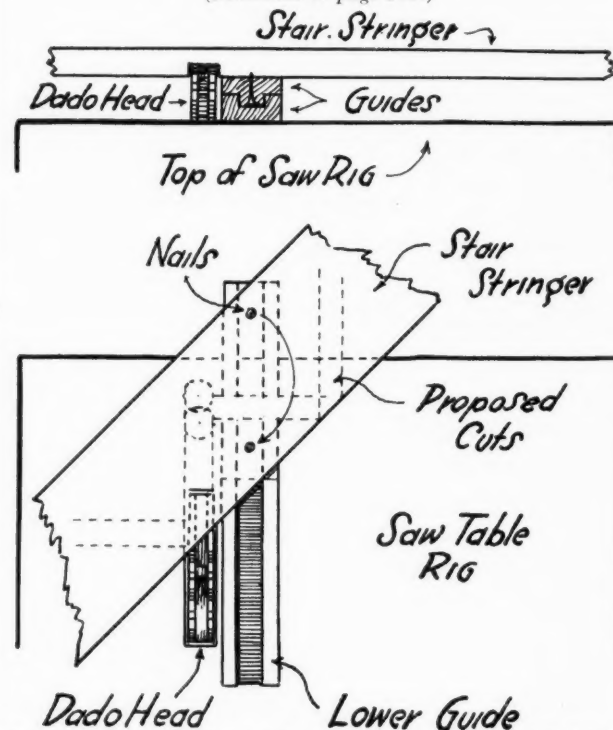


Easy Method of Cutting Stair Stringers

Nearly every contractor or builder, who has placed a saw rig with the many handy attachments used in connection with it in his shop, has found some "pet" methods of turning out certain of the more common pieces of work. By utilizing the special methods which occur to him, the usefulness of the rig is greatly increased, considerable time is saved and the quality of the work turned out is improved.

One builder who has been using a dado head manufactured by the Huther Brothers Saw Manufacturing Company, Inc., 1101 University Avenue, Rochester, N. Y., in connection with his saw rig, has found that the method of cutting a stair stringer illustrated in the accompanying sketch has helped

(Continued to page 110.)



Method of Cutting Stair Stringers with Dado Head by the Use of Guides on Saw-Rig Table.



A THOROUGHLY satisfied patron is the only one worth having. Most people who build garages are able and willing to pay to have a thing *right*.

Stanley Garage Hardware

may be depended upon to give perfect satisfaction. Made especially for garage doors, it is strong and substantial, smooth in operation and sightly in appearance.

The Stanley Garage Door Holder, illustrated above, is a safeguard and a convenience that your customers will appreciate. No matter how windy the weather it holds

the doors securely open, preventing many an accident to lamps, fenders and paint that might occur were the doors free to bang against the incoming or outgoing car.

Stanley Garage Hardware is for sale at all the better hardware stores. Write for illustrated Catalog E11 that tells all about.

*The only makers of
hardware for exclu-
sive garage use*

Stanley Works
New Britain, Conn., U.S.A.

NEW YORK
100 Lafayette St.

CHICAGO
73 East Lake St.

him to get out this kind of work. The work is carried out as follows: The stringer is laid out for the tread and riser cuts and a hole having a depth equal to the depth of the cut is bored at the end of each tread. The bit used should have a diameter equal to the tread thickness. Make two guides out of soft lumber, having a tongue and groove joint and drive two nails thru the tongue to protrude as shown in the sketch. Secure the grooved guide cleat alongside the saw and place the stair stringer on the nails in the tongue guide cleat. Run the tread cut to the circular hole and then run the riser cut to the tread cut. The angle is obtained by moving the stringer on the upper guide. This method secures accurate work and enables the operator to turn out stair stringers in a very short time.



Safety First Scaffold Brackets

A feature which should be given equal attention with the ease of erection and general utility of a scaffold bracket is the safety which its use affords the workmen. The Safety First Scaffold Bracket has been designed to furnish special provision for safety. When this bracket is used the workman has the wall on one side and a guard rail on the other. This enables him to use both hands freely since he does not feel the necessity to grasp the window openings or studding for protection. A heavy wind does not drive him to the protected side of the house.

The Safety First Scaffold is easily put up by simply hooking the brackets to the studding or sheeting and throwing on the plank and guard rail. It is not necessary to have the structure sheeted. In case it is not sheeted a board is tacked to the studs where the scaffold is to stand, the upper clip is hooked around two studs above the board and the lower clip is placed against the two studs at the bottom.

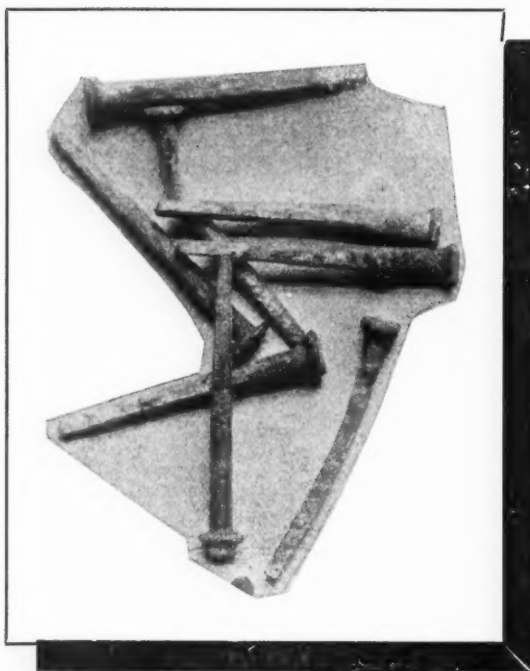


Showing the Guard Rail with Tool Shelf Using "Safety First" Brackets.

The bracket is made of angle steel and it may be folded flat for hauling or storing. When once firmly set up there is no side motion and the scaffold is held rigidly in place. The brackets are backed by a five-year guarantee and are sold with the understanding that if, after ten days' use, they are not entirely satisfactory, they may be sent back to the manufacturer who will refund the money.

The Safety First Scaffold Bracket is made by John Faragher, 811 South Brooks Street, Madison, Wisconsin.

(Trade Notes Department continued to page 114.)



—In Service 40 Years

These nails, at the left, were used in shingling a barn erected by Mr. Harvey W. Beach, Branford, Conn., in 1876. Every nail is in as perfect a state of preservation as the day it was driven.

We believe this to be one of the best examples on record of the durability of

M. I. F. Co. Zinc Coated Iron Cut Nails

They are the best kind of roof insurance.

No user of wooden shingles can afford to take chances with poor nails. The first cost of a roof should be sufficient, without adding constant repair bills.

M. I. F. Nails outlast the shingles themselves. Constant evidence of the long-lived roofs secured by using Zinc

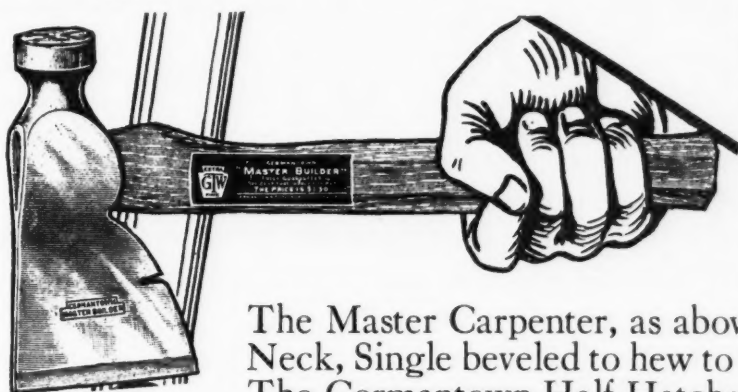
Coated nails is being brought to our attention. Mr. Beach's barn is the latest example.

Upon receipt of postal, we shall be glad to send you samples, prices and particulars of our Zinc Coated nails.

MALLEABLE IRON FITTINGS CO. BRANFORD CONN.

NOT AT ANY PRICE can a better tool be produced than the Master Builder

The MASTER CARPENTER Tools are the best that can be made for the price.



Every Master Builder Hatchet is tested on a bar of iron—is made to cut right—balanced to drive right—with a handle made to be easy on the hand.

Any sizes \$1.50

The Master Carpenter, as above, with Octagon Neck, Single beveled to hew to a line, 3½ in. cut **1.25**
The Germantown Half-Hatchet, 3½ in. cut . . . **1.00**

The **Master Builder Broad Hatchet**, 4½ in. cut . . **\$1.50**



The Master Carpenter Broad Hatchet **\$1.25**



(Special Nail Holding Seat in Claw)

A handle easy to grip—does not tire or sweat the hand.
Any sizes **\$1.25**

The Master Carpenter, as above, with Round Head **1.00**

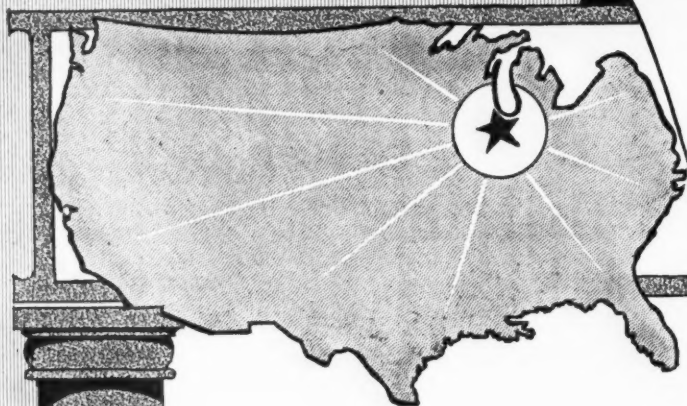
The Germantown Hammer, Adze eye, Bell face, plain handle (no nail holding attachment), medium, light or heavy **.85**

Everything is in it—Material, skill, finish, chamfered edges, perfect claws.

Unceasing effort for 57 YEARS makes GERMANTOWN TOOLS what they are

GERMANTOWN TOOL WORKS, Philadelphia, Pa.

Chicago Office, 62 E. Lake Street



Look Before You Build

Get the habit of writing to us in regarding to your building wants. This exhibit is a regular clearing-house of building information—the market where you can do your buying to the best advantage.

We Are Saving Builders Thousands of Dollars

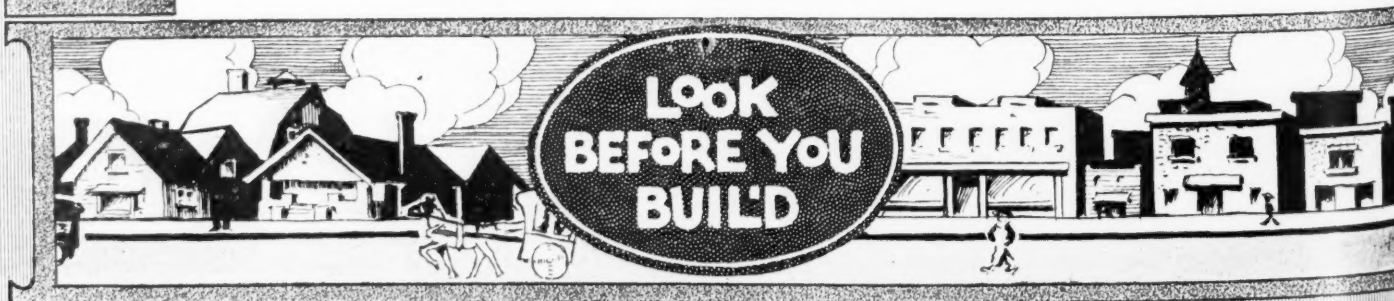
HUNDREDS of builders, architects and contractors are visiting Chicago's great Building Material Exhibit every day.

They recognize its unique value—have found by personal experience that they can save not only time but hard cash by coming to the **Exhibit**, where they can see the actual products they need—compare various makes side by side—pick the best for their purpose—secure the lowest figure without loss of valuable time—and be **sure** that it is the lowest.

They do all this at this vast Building Exposition—why not **you?**

Over 200 elaborate and interesting displays by America's leading manufacturers of building material and equipment. This great permanent **Exhibit** is one of the showplaces of Chicago—worth coming far to see. For those who cannot come we have a special market-investigation Service. Send us your plans and we will secure bids on any material or equipment for you without charge. Write us today.

BUILDING MATERIAL EXHIBIT, Entire Second Floor, Insurance Exchange
CHICAGO, ILL.



Look Before You Build

Here is your opportunity. Under one roof and on one floor all your building wants can be supplied. Here you can get in direct touch with the manufacturer and effect big sales.



Let Us Show You Where You Can Save Money on All of Your Building Materials—Send Coupon Today

This huge permanent building material exhibit is established primarily for your benefit. Here 200 manufacturers have come together under one roof—condensed their business into 200 intensely interesting displays, and invite you—for your own profit—to come and see and learn.

As a builder you are invited to make our beautiful display rooms your Chicago headquarters. We are here for that purpose. If you cannot come to Chicago yourself, get acquainted with us by mail, and let us be your Chicago representative. This service will cost you nothing, and will add materially to your financial welfare.

BUILDING MATERIAL EXHIBIT
Insurance Exchange
CHICAGO

Gentlemen:—I am in the market for the following. Please put me in touch with manufacturers.

.....
.....

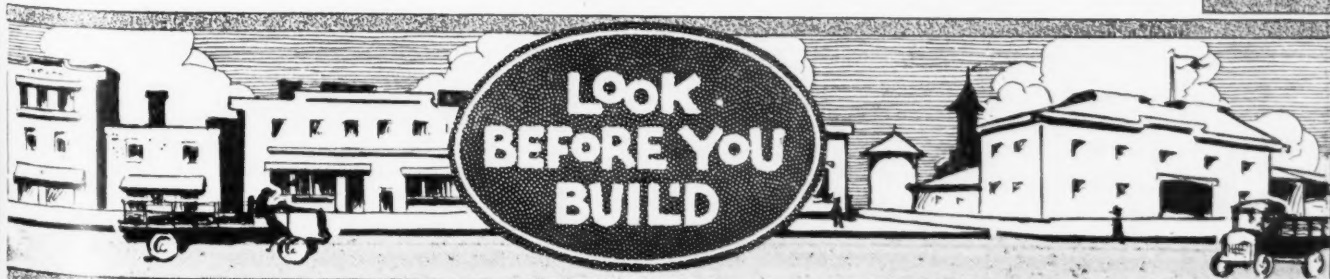
Name.....

Street.....

Town..... State.....

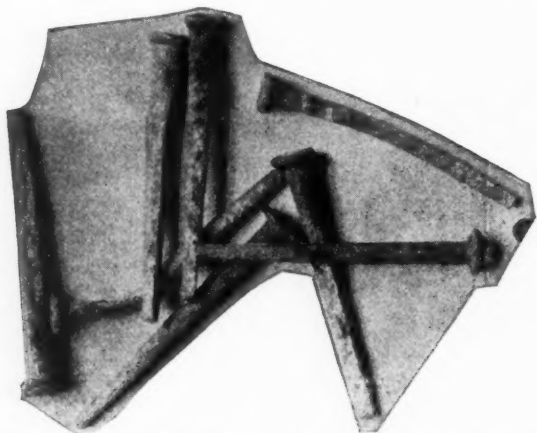
BUILDING MATERIAL EXHIBIT, Entire Second Floor, Insurance Exchange
CHICAGO, ILL.

**LOOK
BEFORE YOU
BUILD**



A Record Shingle Roof

In 1876 Harvey W. Beach erected a barn in Branford, Conn., on which he placed a shingle roof. The shingles were of native cedar and were held in place with zinc coated nails. This roof stood the test of service so well that it was only this summer found necessary to replace it. An examination



These Zinc Covered Shingle Nails Served 40 Years and are Still in Good Condition.

of the nails taken from the roof found them in as good condition as on the day they were driven.

The illustration shows a few of the nails which were taken from the old roof by the Malleable Iron Fittings Company, manufacturers of zinc coated nails. This company has been on the outlook for long-lived shingle roofs, and this case is an excellent example of the durability of a shingle roof as well as one of the best examples on record of the durability of zinc coated nails. It is certainly a fact that no matter how high the quality of the roofing material

used, if the nails are not capable of withstanding the destructive action of the elements there will be no satisfaction obtained from the roof.

The forty years of service which were obtained from the roof of this Branford barn are an indication of what may be expected of zinc coated nails. The Malleable Iron Fittings Company of Branford, Conn., have other interesting information, in regard to the life of these nails, which may be had for the asking.



Big Cement Show Approaching

The Tenth Chicago Cement Show will be held in the Coliseum, Wednesday, Feb. 7 to Thursday, Feb. 15, 1917, inclusive.

The concentration of exhibits in the Coliseum, balcony and annex will enable visitors to inspect them conveniently. Machines and products will be closer together, thus facilitating comparison and enabling buyers to make purchases more expeditiously. However, as less space will be available for the next Show than for the last Show, each exhibitor will be asked to apply for as little space as can accommodate his exhibit and in this way it is hoped to make the number of disappointed applicants as small as possible.

Closing the Show on Thursday will make it unnecessary for exhibitors to be away from home more than one Sunday.

There will probably be a joint exhibit of cement companies similar to the one at the last Show. The Ninth Show Joint Exhibit was considered by visitors, the building fraternity and the trade press to be most complete and comprehensive display of the uses of concrete ever presented to the public. The exhibit was broadly educational and promotional in its scope. It interested the general public as never before in the uses and possibilities for concrete. It is planned to make

(Continued to page 114.)

Our Free Plans Will Help You—

Meadows
TRADE MARK REGISTERED

Don't figure on any crib or granary without consulting our Free Plans. They will show you how to get greatest capacity at least expense by installing **Meadows Inside Stationary Cup Elevators.**

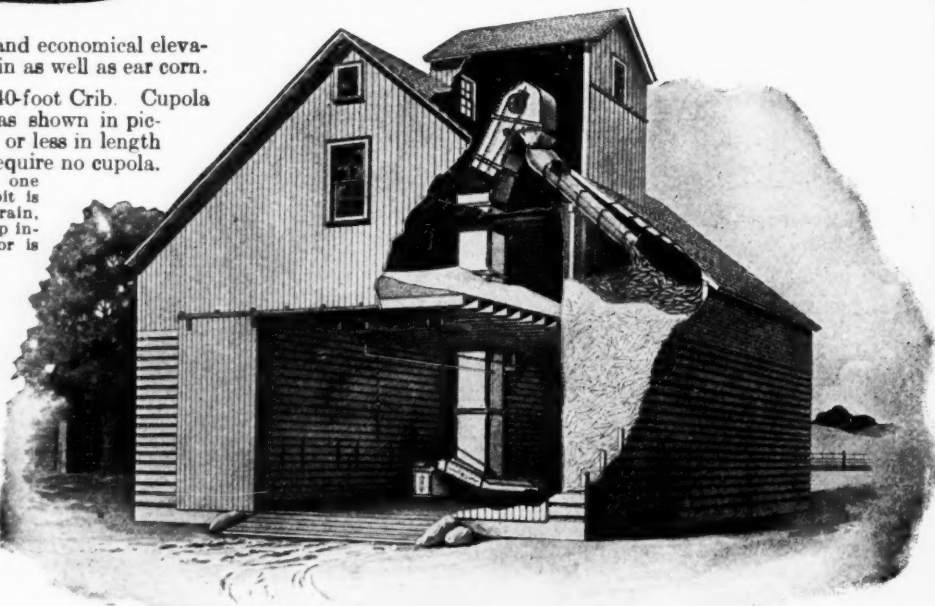
The most convenient and economical elevators, carrying small grain as well as ear corn.

The picture shows a 40-foot Crib. Cupola need not be as large as shown in picture; and cribs 36 feet or less in length with half-pitch roofs require no cupola.

Elevator is confined to one side of driveway. No pit is necessary for dumping grain. Just a hole 16 inches deep in to which boot of elevator is set. The wagon jack is entirely overhead, fastened to the joists.

But write in today for our free Crib and Granary plans, catalogs and large posters telling all about our outfit and their application. Valuable information for the builder and writing for it obligates you in no way.

**Meadows
Mfg. Co.**
Pontiac, Illinois



"HUMMER"

Barn Door Track and Hangers

The contractor's choice because of these points:

- One-piece heavy track
- Bird and storm proof
- Supported every 12 inches
- Hangers are roller bearing
- They cannot jump the track
- Hanger wheel always centered
- Lag screws and end brackets furnished
- Easy to install

A dealer in your town can supply your needs. He is a good man to know as he carries other Porter goods for use in barns.

Write for FREE Catalogs

J. E. PORTER CO.

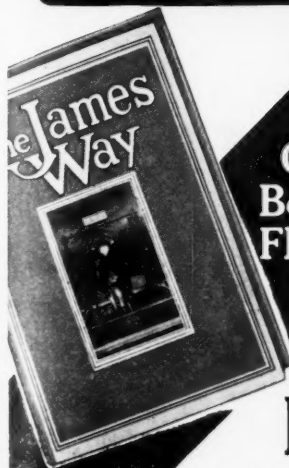
620 Fremont Street

Ottawa, Ill.



BARN PLAN SUGGESTIONS

That Help Decide Important Questions



Read How You Can Get This Book FREE

Here is your authority on barn building and it's Free to carpenters and contractors. Couple your building skill with the knowledge of our barn experts and you will double your profits through increased business.

JAMES Barn Plan Service

is being used by thousands of barn builders. This advice regarding dairy barn construction and equipment is based on years of research, study and work. Endorsed by America's biggest dairy men. You can get this book free by sending us the names of men who expect to build dairy barns. Write today.

James Mfg. Co.

D. O. 75 Cane St., Ft. Atkinson, Wis.

Elmira, N. Y.



"Don't tell me you never had a chance!"

"Four years ago you and I worked at the same bench. I realized that to get ahead I needed special training, and decided to let the International Correspondence Schools help me. I wanted you to do the same but you said, 'Aw, forget it!' You had the same chance I had, but you turned it down. No, Jim, you can't expect more money until you've trained yourself to handle bigger work."

There are lots of "Jims" in the world—in stores, factories, offices, everywhere. Are you one of them? Wake up! Every time you see an I. C. S. coupon your chance is staring you in the face. Don't turn it down.

Right now over one hundred thousand men are preparing themselves for bigger jobs and better pay through I. C. S. courses.

You can join them and get in line for promotion. Mark and mail this coupon, and find out how.

I. C. S., Box 8136, Scranton, Pa.

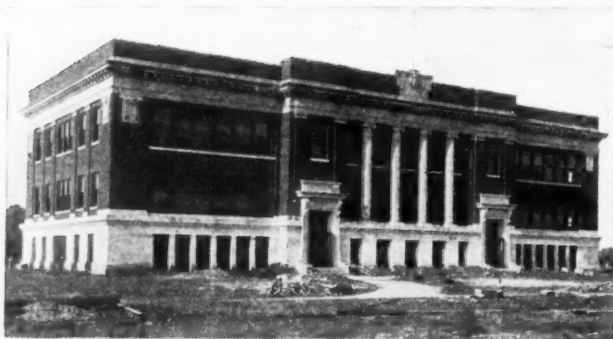
INTERNATIONAL CORRESPONDENCE SCHOOLS

Box 8136, SCRANTON, PA.

Explain, without obligating me, how I can qualify for the position, or in the subject, before which I mark X.

- | | |
|---|---|
| <input type="checkbox"/> ARCHITECT | <input type="checkbox"/> Law for Contractors |
| <input type="checkbox"/> Architectural Draftsman | <input type="checkbox"/> BUSINESS (Complete) |
| <input type="checkbox"/> Contractor and Builder | <input type="checkbox"/> BOOKKEEPER |
| <input type="checkbox"/> Building Foreman | <input type="checkbox"/> Stenographer and Typist |
| <input type="checkbox"/> Concrete Builder | <input type="checkbox"/> Higher Accounting |
| <input type="checkbox"/> Plumber and Steam Fitter | <input type="checkbox"/> GOOD ENGLISH |
| <input type="checkbox"/> Heating and Ventilation | <input type="checkbox"/> Common School Subjects |
| <input type="checkbox"/> Plumbing Inspector | <input type="checkbox"/> Mathematics |
| <input type="checkbox"/> Foreman Plumber | <input type="checkbox"/> SALESMANSHIP |
| <input type="checkbox"/> CIVIL ENGINEER | <input type="checkbox"/> ADVERTISING MAN |
| <input type="checkbox"/> Surveying and Mapping | <input type="checkbox"/> Window Trimmer |
| <input type="checkbox"/> Structural Engineer | <input type="checkbox"/> Show Card Writer |
| <input type="checkbox"/> Structural Draftsman | <input type="checkbox"/> CIVIL SERVICE |
| <input type="checkbox"/> ELECTRICAL ENGINEER | <input type="checkbox"/> Railway Mail Clerk |
| <input type="checkbox"/> Electric Lighting | <input type="checkbox"/> AGRICULTURE |
| <input type="checkbox"/> Electric Wiring | <input type="checkbox"/> Poultry Raising |
| <input type="checkbox"/> Electric Car Running | <input type="checkbox"/> NINE FOREMAN OR ENGINEER |
| <input type="checkbox"/> MECHANICAL ENGINEER | <input type="checkbox"/> Metallurgist or Prospector |
| <input type="checkbox"/> Mechanical Draftsman | <input type="checkbox"/> Chemical Engineer |
| <input type="checkbox"/> Shop Practice | <input type="checkbox"/> Gas Engineer |
| <input type="checkbox"/> Sheet Metal Worker | <input type="checkbox"/> AUTOMOBILES |
| <input type="checkbox"/> STATIONARY ENGINEER | <input type="checkbox"/> Auto Repairing |
| | <input type="checkbox"/> Spanish |
| | <input type="checkbox"/> German |
| | <input type="checkbox"/> French |
| | <input type="checkbox"/> Italian |

Name _____
 Occupation _____
 & Employer _____
 Street _____
 and No. _____
 City _____ State _____



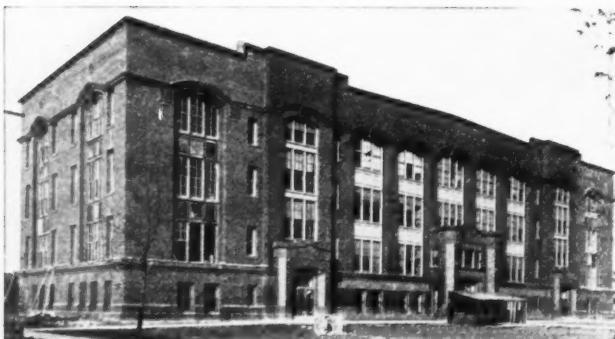
BETTER SCHOOL HOUSES

THE village school as well as the more pretentious city school house is made more pleasing and impressive when built with Midland terra cotta.

We are always ready to co-operate with the architect or builder who is working on such a problem. This service is free.

MIDLAND TERRA COTTA COMPANY

1515 LUMBER EX.
CHICAGO, ILLINOIS



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

the Tenth Show Joint Exhibit even more comprehensive than that of last year and to show, to as large an extent as possible, products in the making.

During the eight-day period Chicago will be the center of activity in the building material industry. The National Builders Supply Association will hold its annual convention at the Hotel Sherman, Feb. 11 and 12, and the Illinois Lumber and Builders Supply Dealers Association at the same hotel, Feb. 13 and 14. While the dates have not been definitely set, it is probable that the American Pipe and Tile Association will be in session during the Cement Show. It is also likely that the American Concrete Institute will meet at the same time. Beside these organizations, it is possible that the American Association of Engineers and other similar associations will convene in Chicago during the Show.

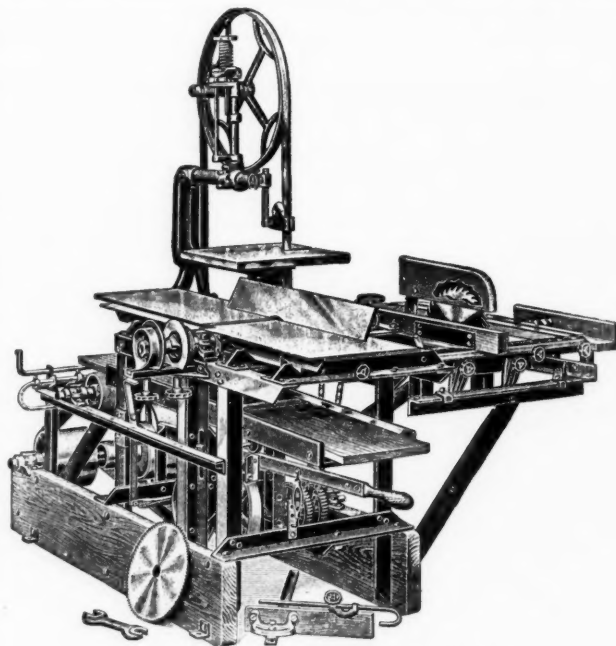
Since only the Coliseum and Annex will be used for the next Show, it is probable that the demand will exceed the available space. Therefore, those desiring to exhibit should make application for space at once.

✱ Parks New Pony Planer Combination

The place where one of the first combination saw machines was made is the Parks factory in Cincinnati, and we here show one of the latest members of their combination family.

To equip a shop with a regular planer together with circular saw, etc., in separate machines requires a large shop with extensive line shafts and a large motor or engine to drive same. The combination shown requires a minimum amount of space and a 5 H.P. engine or motor will give sufficient power.

The jointer on the machine can be used the same as any other hand jointer, and by passing material back under cutter



New Parks Pony Planer Combination.

head it is planed to desired thickness. The planer attachment has self feed with two speeds.

Planer head and circular saws are on separate mandrels with friction clutches to start and stop independently of each other. Band saw has belt shifter to start and stop independently. Moulder on side of machine has double heads so circular mouldings can be made by passing from one side to the other.

With the increasing cost of lumber and the high labor costs, it is well for our readers to consider using any machinery that will reduce these costs.

WATERPROOF PLASTERGON TREATED WOOD FIBRE WALL-BOARD

(See how this 10 ft. panel stands straight without bending! Send for actual photo.)

Safe Board!

Guaranteed to be genuine wood pulp converted back into actual lumber. Guaranteed to come sized, saving you \$4 to \$6 per M sq. ft. Guaranteed not to warp, buckle, twist or wave. Guaranteed to be a profit-maker and a reputation-builder. Be safe. Use Plastergon. Our users say "Plastergon has no equal at any price."

Your Safeguard in Purchasing (No. 5)

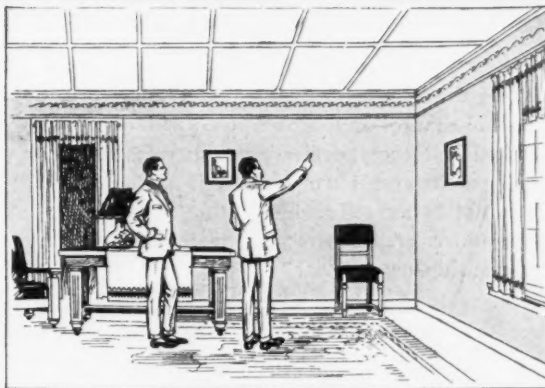
"Plastergon is sold to dealers at a price that gives them a reasonable profit, and your Service Department and Sales Helps are a great benefit to us."

"GOUVERNEUR LUMBER CO.,
Gouverneur, N. Y."

Samples and our "Contractors' Practical Working Guide" sent free. Send the name of your Lumber or Builders' Supply Dealer. Write today.

Plastergon Wall Board Co.

No. 1 Philadelphia Ave., BUFFALO, N. Y.



Beaver Board the Ceiling!



"You can't expect Beaver Board results unless this trade-mark is on the back of the board you buy."

Even though the walls are plastered the ceiling should *always* be Beaver Board.

Not only because it can't crack, chip or fall.

Not only because it will last longer.

Not only because it is easiest to apply.

But also because it's more attractive. Even those who object to paneled walls will appreciate the relief which Beaver Board paneling or beamed effects afford from the usual ceiling monotony.

Every Beaver Board job is one more job for the carpenter.

Write for Booklet and samples.

THE BEAVER BOARD COMPANIES

569 Beaver Road - - Buffalo, N. Y.

Branches in Principal Cities



HERE Is A Book You Need!

IT IS brimful of suggestions that will actually help you make good money during the lean months when outdoors work is impossible. There is winter work for the contractor who uses

CAREY

Ceil-Board
SUPERSEDES PLASTER FOR
WALLS
AND CEILINGS

This book tells just where hundreds of other carpenters have found this work, and how they have turned it to profit. Shows how *you* can do the same. There are scores of jobs right in your locality just ripe for the Ceil-Board man. Attics and cellars to finish, summer kitchens, garages, churches and stores to improve.

Write today for your **FREE** copy

THE PHILIP CAREY COMPANY

General Offices

1021 Wayne Avenue, Lockland, Cin., Ohio

Offices and Warehouses in Principal Cities



Traditions Die Hard!

—but the "good old things" must give way to the better things.

Lath and plaster must give way, and is giving way, for the more durable, stronger, stiffer, more economical and altogether more satisfactory



Trade Mark Reg. No. 94745

This is no ordinary wall board—it is a wall board in a class by itself, the **only** wall board with a center core of kiln-dried wood slats, else we would not claim it to be **better** than lath or plaster. It does not have to be paneled, but can be made into walls and ceilings smoother than lath and plaster. Can be decorated by any method—even papering—which other wall boards can not stand.

Are **you** going to stick to tradition or give your customers the more modern and more satisfactory wall lining in their buildings. **Talk to us** about some of the common false notions on the subject of wall boards, and let us make clear to you just what you're overlooking.

The Compo-Board Company

5777 Lyndale Ave. No.

Minneapolis, Minn.

An Absolute Guarantee with Every "Mephisto" Bit

"All auger bits branded 'Mephisto' are sold with the positive promise of the W. A. Ives Mfg. Co., Wallingford, Conn., to replace—no charge—any broken bit. No questions asked and every dealer even instructed to give any purchaser his money back if said purchaser is not better satisfied with the 'Mephisto' than any other. All other tools guaranteed against defects in workmanship or material."

The above is the absolute guarantee made by the manufacturers of "Mephisto" bits, and every carpenter and builder is urged to go to his local hardware dealer and at least give one of these bits a trial, under this guarantee. To bring this guarantee before bit users, the W. A. Ives Mfg. Co. is at present sending out letters to 250,000 carpenters, and to 180,000 plumbers, electricians, and other bit users. In these letters a definite offer is made that if the bit, after a thoro trial, does not save at least 25 per cent, there is to be no charge. Furthermore, the company is using large advertising space in many publications to bring out this offer, and the traveling representatives of the manufacturers will personally address within the next few weeks, at least 112,000 carpenters.

"Mephisto" auger bits are not constructed with two side spurs and two chip lifters. They are made with one side spur, which creases for the hole on one side, and the chip is lifted with the other. The bits are self-feeding and will bore all the way through without pushing. The "Mephisto" is said to be the only bit made that is honed like a razor, insuring rapid, smooth and even cutting. It is made to exact size, of a special analysis steel. It is guaranteed to bore in the hardest woods with ease under any condition with or

against the grain, and not to clog. Will not tear the wood, but will bore all the way thru without splintering, leaving a perfectly smooth hole.

The extraordinary boring quality of these bits is shown by the following letter:



Regular "Mephisto" Auger Bit No. 8.

Dedham, Mass., Oct. 9, 1916.

W. A. Ives Mfg. Co.,
Wallingford, Conn.

Gentlemen:

Some time ago I saw your demonstration and was somewhat skeptical regarding results, but later had an opportunity to bore thru a door lined with 26 gauge galvanized iron and thought this a good chance to test out the qualities of the "Mephisto" bit. I, therefore, purchased a 6/16 "Mephisto" bit of my dealer, Chas. Russell's Son, Dedham, Mass., and to my surprise and satisfaction I bored six holes through this door; also through the galvanized iron, and still have the bit and am using same every day. I would not sell this bit if I could not purchase another of the same make. It is the best boring bit I have ever used and doubt very much if it will ever be surpassed.

Yours very truly,
REUBEN CARLETON.

409 High St., Dedham, Mass.

The W. A. Ives Mfg. Co. has just issued a new catalog, No. 20, which tells an interesting story of the latest development in wood boring tools, and which it will gladly send to any one writing for it. The tools described in this catalog consist of the complete line of "Mephisto" auger bits:

(Continued to page 120.)

Unusual Shingles that Save Money



Architect, S. L. R. Rousseau
N. S. Pittsburgh, Pa.

They are laid $6\frac{1}{2}$ " to the weather at the sides of this house and $4\frac{1}{2}$ " to the weather on roof—more than ordinary exposure.

YOU CAN DO THIS WITH

"CREO=DIPT" STAINED SHINGLES

17 Grades

16, 18, 24-inch

30 Colors

because we not only select shingles of unsurpassed quality that is hard to find in the open market, but we stain them in our factory by a special process, and preserve them in creosote so that they do not curl out of shape. They last twice as long as ordinary shingles and save the muss, expense and waste of staining on the job.

Write today for colors on wood and Book of "CREO-DIPT" Homes. Names of architect and lumber dealer appreciated.

Standard Stained Shingle Co., 1028 Oliver Street
No. Tonawanda, N. Y.
Factory in Chicago for West



Get FREE Finished Samples and Big Door and Trim Book

They show you how you can produce the most beautiful effects and finishes in hardwood-trim, doors and floors in "beautiful birch." No wood finer though many cost more. birch furniture is standard, ask your dealer. Send postal card TODAY.

NORTHERN HEMLOCK & HARDWOOD
MANUFACTURERS ASSOCIATION
201 F. R. A. Bldg. - - - Oshkosh, Wis.



Your Reputation Demands

UPSON PROCESSED BOARD

---the Most Dependable Wall Board

Made in America

Contains no dirty, black
materials or cheap, punky
"jack pine" fibers.

Write for Samples and Information

THE UPSON CO. Fiber Board Authorities 16 Upson Point, Lockport, N. Y.

LOOK FOR THE FAMOUS BLUE CENTER



BAYONNE

Without a Rival

The best ordinary canvas, even if filled and painted in the most perfect manner, cannot reach the water, weather and wear resisting qualities of

BAYONNE

And the flimsiest canvas will now cost you as much, if not more—with paint at \$2.50 a gallon.

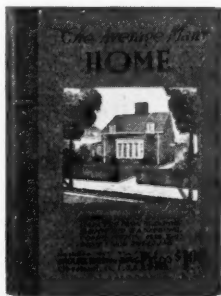
Bayonne is laid on the dry boards requires no filling and only a light finishing coat.

Write for Sample Book "N" giving prices and laying instructions. See Sweet's, Page 426

JOHN BOYLE & CO., Inc.
112-114 Duane St.—70-72 Reade St., New York
Branch House 202-204 Market St., St. Louis



50 Best Plans



FOR LOW PRICED HOUSES

Selected from the work of 300 architects in the U.S. A. For Frame, Stucco and Brick Construction.

"The Average Man's Home"

Large and practical reproductions of perspectives, and first and second floor plans.

**\$1.00
POSTPAID**



S-A-F-E, R. P. STODDARD, Sec.
Leader-News Bldg. - Cleveland, Ohio



Let This Booklet Help YOU

Get the facts about these fire-proof shingles—study the homes, of every description, for which they have been selected—prepare yourself for the big demand that is developing for

JOHNS-MANVILLE TRANSITE Asbestos' Shingles'

Or better still, write for our dealer proposition and learn how we back you up with your customers—how we help you to sell more and better roofs and to make a double profit on each.

J-M Transite Asbestos Shingles make an ideal roofing. Formed from two imperishable minerals—Asbestos and Portland Cement—they CAN'T burn, never require painting and last indefinitely. Supplied in a variety of artistic and distinctive colors, shapes and sizes. And as a final guarantee of goodness, they are backed to the limit by Johns-Manville Roofing Responsibility.

J-M Transite Asbestos Shingles are examined and approved by the Underwriters' Laboratories, Inc., under the direction of the National Board of Fire Underwriters.

Remember to send for **your** copy of the
Shingle Booklet—better do it now.
Mail the coupon today.

H. W. Johns-Manville Co.

EXECUTIVE OFFICES
296 Madison Avenue
NEW YORK

Branches in all
Large Cities

H. W. JOHNS-MANVILLE CO., New York.
296 Madison Ave., New York.
Please send me the Shingle Book.



All Buildings Settle—

BUT all stuccos do not crack. You remember, of course, what happened to that cement stucco job three years ago? It sure did crack, didn't it? And what the owner had to say to you would fill a book. Raised Cain, didn't he?

There is one stucco that you can recommend without risk to your reputation—one, and only one, which you can use with the absolute assurance that the job is going to look as well five years from now as it does the day you complete it. This stucco is rain proof, stain proof, and so elastic that it may be deflected one and a half inches in seven feet without cracking. It will meet any condition of normal settling. That stucco is

KELLASTONE

IMPERISHABLE STUCCO

You can use it now and all winter, without risk of damage in the coldest weather. It's warmest in winter—coolest in summer, and neither winter frost nor summer sun can cause it to expand or contract. It bonds perfectly to wood, lath, brick or stone.

Used by the U. S. Government, by State Institutions, Railroads and large corporations everywhere. It's best, too, for homes of every size and cost. It solves the stucco problem permanently. Any finish which can be obtained with other stuccos may be produced with Kellastone.

We ask you to do just one thing—give us the opportunity to place before you the actual facts about this superior stucco. That's all.

KELLASTONE COMPOSITION FLOORING fulfills the average flooring requirements far better than any other flooring. It has remarkable resistance to abrasion, deadens noise, has no seams or joints, never cracks or shrinks. Lasts indefinitely.

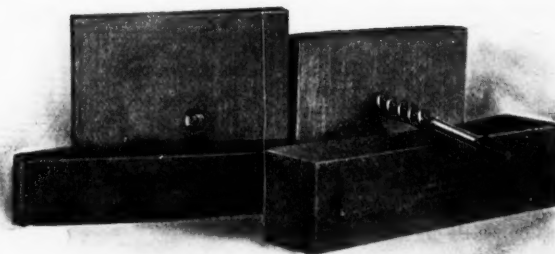
Write today for illustrated facts

THE NATIONAL KELLASTONE CO.

504 Association Bldg.

CHICAGO, ILL.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



"Mephisto" Auger Bit Boring Thru Soft Pine Without a Splinter—a Smooth Hole.

various types of chisels, either in single pieces or in sets; screwdrivers and screwdriver bits; twist drills; expansive bits, and the "New England" brand of ratchet and non-ratchet braces. The cover of this catalog is made up of a colored reproduction of the "American Maids" at the bottom of which is attached a small flap which, when lifted, displays the guarantee which stands back of the tools shown in the catalog. Besides the regular bit, there are two new bits shown in the catalog. The first one is a special bit for telephone installers in which the twist of the bit is made the proper length for this class of work, avoiding the necessity of buying a long twist car bit as was formerly used. The cost of the new bit is considerably less than that of the long twist bit and the telephone installer's work does not seem to necessitate the use of a bit with such a long crimp. The other new tool is a special bit for electricians and plumbers and it may also be used as a dowel bit for manual training schools. This bit may be used in electrically driven machines.

A boring machine for electricians is described as having the qualities of strength, simplicity and easy running. Adjustments are easily and quickly made. A new line of machine bits has been added; also a set of special ring augers made with solid-piece rings. A very complete list of semi-high speed twist drills is shown.

Readers of the AMERICAN CARPENTER AND BUILDER should obtain one of these catalogs and users of the tools mentioned may inspect the articles in which they are interested at their dealer's show rooms. Address the W. A. Ives Mfg. Co., Wallingford, Conn.



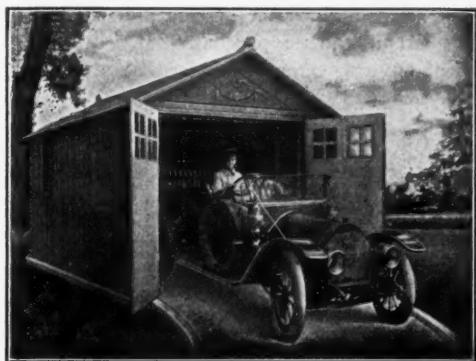
Simplex Short Turn Trailers

Contractors and builders are fortunate in having a business the nature of which enables them to find an easy solution of a problem which often causes the man interested in a less adaptable field to go to a considerable expense. The problem is one of haulage. The respect in which the contractor and builder is fortunate lies in the fact that the materials which are to be hauled may be so arranged that the heavier articles are kept separated from the smaller equipment, thus dividing the load in parts which may easily be handled with an automobile and trailer. No man who has invested his good money in an automobile cares to scratch and mar its carefully finished body by piling heavy, cumbersome articles in the back seat. And yet the contractor who spends his entire day on the job and who has just such loads to carry does not feel that his automobile is earning its gasoline and oil if it is standing at home in the garage. By the use of a trailer, the automobile is kept in good shape for the evening spin with the wife and family, and the heavy loads are carried at a reasonable cost.

And the space in the back part of the car is not wasted either. There are plenty of small articles in the average load carried by the contractor and builder to occupy this space and

(Continued to page 122.)

Mr. Carpenter You Can Make a Lot More Money



An Agency for the METAL SHELTER CO., Inc., will bring you more business, more profits, more customers, better and quicker results all along the line, and it will be

A REAL BUSINESS OF YOUR OWN

Don't wait until someone else gets the agency for our garages, cottages, bungalows, stores, etc., etc.

It is easy to sell them and easy to set them up—a building a day. An investigation will cost you nothing. Write NOW for our descriptive circulars and proposition.

Metal Shelter Co., Inc.

Whitehall Bldg. New York City

More Money for You



MR. Contractor, build up a profitable business this Winter laying and finishing our fine Hardwood Flooring.

You will find many houses in your town which need new floors, and the time to put them in is when the cold weather prevents outside work.

No special experience is required. Our books give you full information about the flooring and how to lay it. Our Service Department helps you get the orders.

Why not learn more about this money-making side-line now? Write today for our Special Agency Plan.

The Interior Hardwood Co.

1334 Beecher Street

Indianapolis, Indiana

OVER 40 YEARS' SERVICE For This Tin Roof

The Home for Aged Women, Boston, Mass., was covered with our MF Roofing Tin over forty years ago. Terne Roofing Plates are unequalled for public buildings and residences. Every architect and builder should have our latest booklets.

Look for this stamp in addition to brand and weight of coating.



Send for booklet, "Copper—Its Effect Upon Steel for Roofing Tin."



You can use *Roofing Terne Plates* with the positive assurance of lasting and satisfactory service—if you demand plates made from **KEYSTONE** Copper Steel. Highest quality plates produced—grades up to 40 pounds coating.

American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis
Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City
Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle

the seats furnish a means of transporting men from one job to another. For this reason the contractor and builder may profitably keep an automobile and trailer where those interested in some other line of work might have to buy a truck.

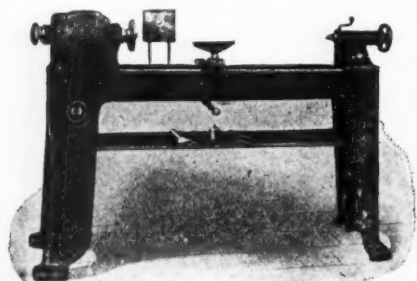
A trailer which is giving good satisfaction among builders who have tried it out thoroly in connection with their materials and equipment haulage is manufactured by the Simplex Short-Turn Trailer Company at Auburn, Indiana. The principal feature found in the Simplex Short-Turn trailer is a tracking device which causes the trailer to follow absolutely in the tracks of the automobile. The trailer cannot "cut in" on corners and cause an accident. There are five models and a great many special attachments from which to make a selection. The trailers are constructed according to automobile

Furthermore during the winter months it can be used to good profit, by working up odds and ends and scrap into novelties, such as candle-sticks, toys, etc., that can be sold at a big profit particularly around the holiday season.

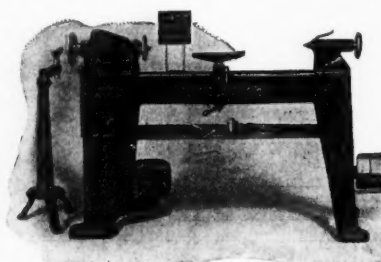
An up-to-date speed lathe, built on high duty machine tool lines, with self-contained motor, that can be operated from a lighting circuit can be purchased at a price well within the reach of any carpenter or builder.

J. A. Fay & Egan Co. produce in their No. 400 series, four different types.

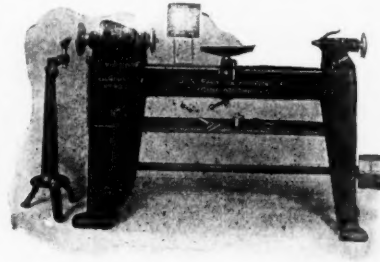
Model "A," which has variable speed motor headstock, gives 15 different speed changes, by simply revolving an aluminum cylinder set into the leg. This type is available for use only on direct current of 110 or 230 voltage.



Model A—Variable Speed Motor Headstock for Direct Current Only.



Model B—Self-contained Alternating Current Motor Drive.



Model C—For Driving from a Line Shaft.

designing practice and as fully capable of standing up under severe service.

Contractors and builders who have an automobile, or who have planned to add one to their equipment should write the Simplex Short-Turn Trailer Company for complete information in regard to their line of trailers and haulage equipment.



Wood Turning Machines

Wood turning is probably the oldest mechanical operation on wood. For the man who works in wood, the hand turning lathe has never lost its fascination, nor for that matter, its utility.

While automatic machines turn out duplicate patterns in great quantities, the hand turning lathe is still indispensable in the pattern shop, or in any other woodworking shop, where individual work is done.

For the shop of a carpenter and builder a lathe can be used to great advantage to turn out work that will give individuality and distinction to his jobs.

For alternating current, Model "B" is used. This has the motor self-contained in the base, all enclosed, with stop, start and speed control by means of a single handle, located at the front of the machine.

Type "C" is exactly like Type "B," except that in place of the built-in motor it has a self-contained countershaft so that it may be driven from any line shaft.

The totally enclosed construction of these machines elimin-

(Continued to page 124.)



MONTROSS METAL SHINGLES

Montross Metal Roofing Co., 110 Erie St., Camden, N. J.

Best Roof Under the Sun

Montross Metal Shingles for House or Barn or buildings that require durable, economical roofs. Easily applied. Fire, lightning and storm proof. Nine different designs. Write for illustrated catalog and testimonials from satisfied customers who have used Montross Roofing for a "Quarter Century." Liberal commission to good, live agents.

BLUE VALLEY SLATE MFG. CO., Ltd.

Miners and Manufacturers of

Unfading Roofing
Clear Structural
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SLATE

World's Fair
Premium
Blackboards

SLATE SINK TOPS A SPECIALTY
Write for Prices. Address: Box 472, Slatington, Pa.

ROOFING SLATE SINCE 1869

Miners, Makers and Shippers of all Styles and Colors of Roofing Slate. Write for Prices.

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Main Office: West Pawlet, Vt.

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Quarry Operator
BLACK, GREEN, PURPLE, RED

Booklet, Samples and Prices on Application

SLATE WE HAVE WHAT YOU WANT

*In Roofing Slate, Slate Blackboards
Structural and Plumbers' Slate*

SATISFACTION GUARANTEED in QUALITY and PRICE

Ask for Delivered Prices

J. K. HOWER Station C Danielsville, Pa.

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ROOF SLATES

STRUCTURAL SLATE BLACKBOARDS

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UNFADING ROOFING SLATE and Slate Blackboards

*Best to be had and made in
Slatington — Buy from us*

Slatington-Bangor Slate Syndicate, Inc.
Slatington, Penna.



ROOFING SLATE

and
Slate Blackboards

quarried from our famous
GFT quarry, opened in 1846,
stand ALONE in a combination
of Durability, Serviceability and
Beauty at a most reasonable cost.
Why not buy the best as the
best is the cheapest in the end?

Write for our July 1st,
1916 Price List today.

Sole Manufacturers
Slatington Slate Co.
Slatington, Pa.



THE ROCK OF AGES CLEFT FOR YOU

RED GREEN SHELDON'S PURPLE BLACK SLATE

THE ROOF FOR AGES ALWAYS NEW

ECONOMICAL — ARTISTIC — FIREPROOF
Outlast the building. First cost, only cost. The only roof you can afford
to consider for a permanent investment. Artificial substitutes bring endless
expense for upkeep. Post a postal and get posted.

F. C. SHELDON SLATE CO., Granville, N. Y.

Genuine Bangor Roofing Slate

Costs but little more than tin and asphalt shingles, about the
same as metal shingles and good wooden shingles, and less than
asbestos shingles and tile roofing.

It will wear five times as long as tin or asphalt shingles, three
times as long as metal or wooden shingles, and will more than
hold its own with tile and asbestos shingles.

Made in three grades at prices averaging \$3.25, \$4.50 and \$5.75
per square at quarry. Can be shipped with nail holes punched,
ready for laying.

Give your customers the best value for their money. Write for
prices and freight cost to your station.

North Bangor Slate Company
Bangor, Pa.

CON-SER-TEX



The carpenter, builder or owner finds
CON-SER-TEX a most satisfactory
material to use wherever economy and
durability are required, and a neat and
attractively finished job is desired. It
costs very little, is easy to lay and is al-
most as permanent as the structure itself.

CON-SER-TEX is furnished in such
widths and weights as are best suited for
various classes of work, thus practically
all waste is eliminated.

*Send a Postal for Our New
Interesting Book
"Roofing Facts and Figures"*

Wm. L. Barrell Company
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PACIFIC BUILDING MAT. CO.
SAN FRANCISCO



Mr. Contractor! Mr. Owner!

You will never be ashamed of a
Hudson Asphalt Shingle Roof



Residence at Rye, N. Y., Roofed with Red Hudson Shingles
Harry J. Robinson, Jr., Architect

Surfaced with red, green, or mottled crushed slate.
They give a very artistic tone, but beauty is not their only
virtue. They will not catch fire from sparks, and they need
no painting or staining. They will not rust, rot, crack or
corrode. Furnished in individual shingles 8"x12 1/4" and in
strips 10"x40", with 5 shingles to a strip, greatly reducing the
cost of nails and labor.

Samples sent on request

ASPHALT READY ROOFING CO.

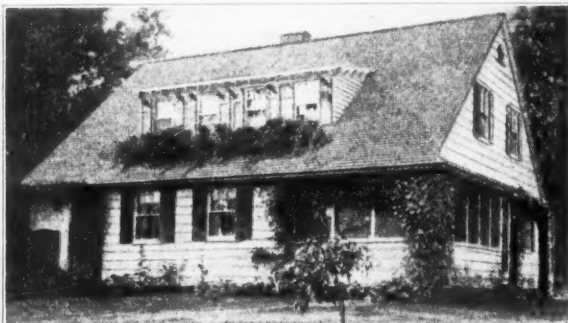


Dept. 53
9 Church St.

New York

WHAT WILL THIS HOUSE COST?

Could you **estimate** the cost of this building?
 Could you **draw the plans** for this building?
 Could you **superintend its construction**?
 Could you **take the contract** for this building?



Successful Men Don't Guess—They KNOW!

To succeed in any branch of the building business you must have a complete knowledge of plans and specifications. You must be able to estimate closely the cost of material and labor. Guessing won't do—you must *know*. This knowledge is what makes successful foremen, superintendents and general contractors. This knowledge means money—thousands of dollars—to any builder—to you!

Learn at Home Your spare time is enough to master these subjects by our new, easy, quick method. The same expert instructors who are so successful with hundreds of men in our Day and Evening Classes will guide you to a larger success. These instructors are among Chicago's leading Architects, Engineers, Estimators and Contractors. They prepare your instruction matter; they examine and approve your work. They are themselves in charge of real work—big work—and know exactly the training you need.

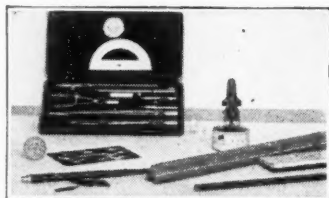
A PRACTICAL COURSE FOR BUILDERS

Carpenters, Bricklayers, Plasterers, Foremen, Superintendents, Contractors
 and all other men in Building lines

Plan Reading, Estimating,
 Architectural Drawing, Contracting, Etc.

Any man in the building lines can save many times the cost of this course on one job alone.

→ This elegant \$15 outfit and all blue print plans furnished FREE with instructions in Plan Reading, Estimating and drawing.



Mark "X" opposite work in which you are interested. Without obligation on you we will send full information.

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|---|--|
| <input type="checkbox"/> Architectural Drafting | <input type="checkbox"/> Building Superintendence |
| <input type="checkbox"/> Builders' Course | <input type="checkbox"/> Structural Steel Drafting |
| <input type="checkbox"/> Estimating | <input type="checkbox"/> Sheet Metal Drafting |
| <input type="checkbox"/> Plan Reading | <input type="checkbox"/> Reinforced Concrete |
| <input type="checkbox"/> House Planning | <input type="checkbox"/> Machine Drafting |
| <input type="checkbox"/> General Contracting | <input type="checkbox"/> Surveying (1017) |

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 Address.....
 Town..... State.....
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 1017 Lake View Building, Chicago, Ill., U. S. A.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

ates accidents, keeps the operating parts clean, reduces power, and in general tends to satisfactory operation.

This series of lathes is made regularly to swing 12 inches over the ways. Larger distances can be handled by means of outside face plate, floor stand and rest.

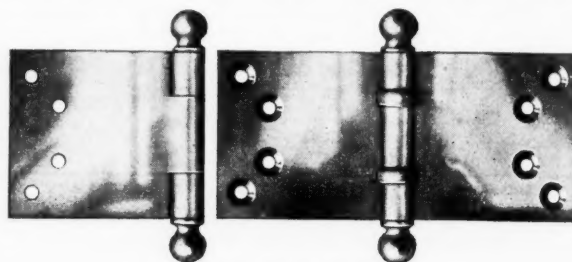
Beds are made in any length, from 4 feet up, the 4-foot size takes 24-inch between centers, and for each additional foot added to the length of bed, adding 12 inches to this distance between centers.

Further information and prices of these different types of lathes will be gladly furnished upon application to J. A. Fay & Egan Co., 545-565 W. Front Street, Cincinnati.

✦ Accordion Door Butt

A butt especially designed for accordion doors is offered to the trade for the first time by the Stanley Works, of New Britain, Connecticut. This style butt is offered both with and without ball bearing washers. The butt with the ball bearing washers is equipped with the Stanley patented non-rising butt pin.

When open, these accordion door butts have sufficient clear-



Accordion Door Butt.

ance to receive the combined thickness of the doors between the anchor door and the wall. These butts have a 3¼ inch throw, and may be used on doors of any thickness. They are particularly adaptable wherever a large offset is desirable.

These butts are made in only one size, 2¾ x 6 inch. They are packed with 1 inch No. 10 screws, one pair in a box, and may be furnished in any standard Stanley finish.

The Stanley Works is one of the largest and oldest manufacturers of wrought steel butts in the world.

✦ The Roofing Problem

In the matter of selection of roofing material the average owner must come to the architect or the contractor and builder for advice. He no doubt has little knowledge of what roofing material is best suited for his new building or for the new roof which he has planned in connection with the improvement of the structure which has already been occupied for some years. He has seen the advertisements of several materials and he comes to get complete information which will enable him to decide upon the roofing which he will eventually use. The architect or the contractor and builder must be ready to show his client something which will be of definite value to him.

The H. W. Johns-Manville Company has recently prepared two booklets which should have a place in the office of every builder who is called upon to give information pertaining to roofing material. One of these booklets, "J-M Transite Asbestos Shingles," is of special value to the home owner, who may obtain direct information in regard to the combined asbestos rock fibre and portland cement shingles with which it deals from the printed pages and many illustrations. The architect will find this catalog of service to him in explaining the several artistic effects which may be produced by special methods of applying J-M Transite Asbestos Shingles.

(Continued to page 126.)

We help you select "The Right Ceiling" for the Right Place

Send us rough sketches or the plans of your jobs and let us show you some pleasing designs in

KANNEBERG Steel Ceilings

best suited for each individual job. This won't cost you a penny and you will have the benefit of our years of experience. We will quote you prices and you can make comparisons. We are confident that the quality and prices of KANNEBERG goods will make you a customer once you try them.

We shall be very glad to send you a copy of our large illustrated Hand Book on KANNEBERG Steel Ceilings. It contains over fifty designs in Steel Ceilings and Sidewalls and every Builder should have a copy. Write today for yours.

The Kanneberg Roofing & Ceiling Co.

"Everything in Sheet Metal"
929-931 Robin Court, S. E.
CANTON, OHIO



Mecca Restaurant, Frankfort, Ky.

WHY use unsanitary, quickly soiled and unsafe wood lath and plaster ceilings in the building you erect when

"BERGER'S"
Classik
STEEL CEILINGS

give permanent beauty and safety at reasonable cost? These ceilings are fire-resisting and non-collapsible. Bold, massive and elaborate effects or those comparatively simple and unobtrusive may be secured from the wide variety of designs. The improved bead and button construction makes erection easy and speedy.

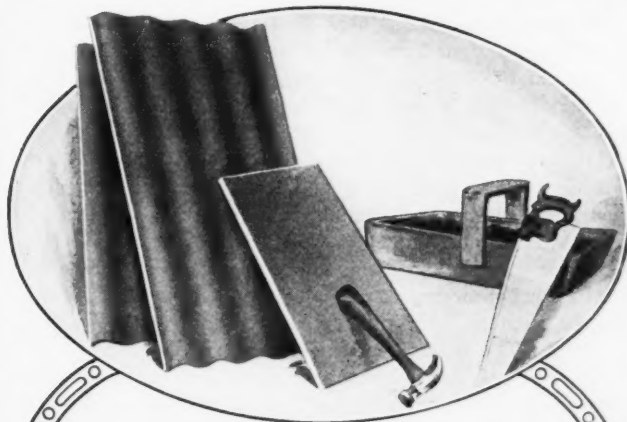
The building owner will appreciate the many advantages of Berger's "Classik" Steel Ceilings and you'll profit well from each installation.

Install them in your next building—they're adaptable to any interior. Write for full details and Catalog D. A. B.

THE BERGER MFG. CO., Canton, Ohio

Branches:—(Boston, New York, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco)

Export Dept.:—Berger Bldg., New York City, U. S. A.



Make an "Inside" Fire Impossible

Safeguard your clients against inside fires by using Ambler Asbestos Building Lumber for stairways, wainscoting, partition walls, elevator shafts, ceilings, electrical insulation. Practically anything that can be made of lumber can be made of Ambler Asbestos Building Lumber. It can be sawed to any desired shape, drilled or screwed. The natural gray color is pleasing and permanent; painting as a preservative is unnecessary, but when desired it can be painted and grained, and takes a good finish.

Ambler Asbestos Building Lumber

is made of Portland Cement, reinforced with Asbestos Fibre, built up layer on layer and then pressed free of air holes and surface irregularities. After setting and proper aging of the cement, it forms a dense, tough structure that is virtually time, weather and fire-proof.

It is completely non-combustible and will not carry or communicate fire through short circuits, electric flashes, oil explosions, etc. It withstands the direct application of the highest temperature electric arc without disintegration, is an excellent heat insulator and a fair electric insulator.

We'll be glad to send our literature and let you read the full story of Ambler Asbestos Building Lumber. Also samples for your examination and investigation.

Keasbey & Mattison Company

Dept. B-1, Ambler, Pa., U. S. A.

Bathroom in residence of J. Horace MacFarland
Harrisburg, Pa.

Architect: T. H. Hamilton, Harrisburg, Pa.
Contractor: John Myres, Harrisburg, Pa.



The second booklet, "Johns-Manville Corrugated Asbestos Roofing," is designed for the use of engineers, architects, contractors and builders. It shows the construction and use of a material which is built up of alternate layers of impregnated asbestos felt and asphalt cement securely bound to punched metal sheets in such a way that corrosion of the metal is impossible. There are several photographic illustrations which show a few of the many buildings on which this material has given satisfaction. The J-M Corrugated Asbestos sheets are made for use as a roofing and siding material. Structural details show how corrugated and flat sheets of this material may be used to finish the entire exterior of a steel frame structure. The sheets possess sufficient rigidity to allow their use over widely spaced supporting members, thus permitting economical construction in addition to the advantage of fire protection and durability.

Carpenters Wanted

Make money all year—get the exclusive agency for Akron Lighting Systems, portable and street lamps and lanterns.

Write Today



AKRON Independent Lighting Systems
Supply gasoline under pressure through hollow wire to lamps all over the house, and to gasoline stove. Our system is absolutely safe.
Sheds a soft, steady, brilliant, white light of high candle power. Makes the home attractive and reading a greater pleasure. Better and cheaper than any other illumination.
Complete line of "Akron" portable and street lamps and lanterns. Latest types; latest improvements; safe and simple construction; 15 years of success.
Agents Wanted
in unoccupied territory. Handy demonstration outfit. Our proposition to live hustlers cannot be beat. Write for catalog and terms. Akron Gas Lamp Co., 833 So. High St., Akron, O.

New Hendricks' Directory Out

The twenty-fifth annual edition of Hendricks' Commercial Register of the United States for Buyers and Sellers, which has just been issued, rounds out a quarter of a century of usefulness by this standard publication. The work is especially devoted to the interests of the architectural, contracting, electrical, engineering, hardware, iron, mechanical, mill, mining, quarrying, railroad, steel and kindred industries, containing about 350,000 names and addresses, with upward of 45,000 business classifications. Full lists are included of producers, manufacturers, dealers and consumers, listing all products, from the new material to the finished article, together with the concerns handling these products, from the producer to the consumer.

There are 1512 pages of text matter and the index of contents numbers 149 pages, covering over 50,000 trade references. The list of trade names, brands, titles of identification, etc., is published for the first time, and numbers 202 pages. This list furnishes ready reference for purchasing agents and prospective buyers to distinctive products manufactured by firms listed in the work.



Tested Safety Service

Many of our readers are acquainted with the service rendered in the testing of all building materials and mechanical devices entering into building, by the Underwriters' Laboratories, Inc., and know that their label of indorsement is taken as final.

Some time since the Underwriters' Laboratories was employed by the Workman's Compensation Bureau to give the same service of testing out safety devices.

By the standardization that has been brought about thru this work of the Underwriters' Laboratories, their label of

(Continued to page 128.)



You'll be proud to say "I installed DELCO-LIGHT"

Delco-Light is so universal in its application to the needs of the suburban or rural resident that it is unwise to build a house *anywhere* without wiring it for electricity. Delco-Light is a complete electric plant—simple, compact, economical. Furnishes ample current for light and power—trouble proof and easy to operate.

Ask for the booklet
Price Complete \$275 f. o. b.
With Batteries Dayton

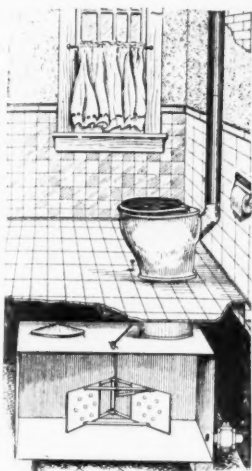
The Domestic Engineering Company, Dayton, Ohio
Distributors in all principal cities

Easy to Sell— Easy to Install—

Wolverine • Closets

Greatest sanitary invention ever offered village communities. And it's not an experiment. It has been proven successful in thousands of homes, schools, factories, churches, etc.

A contractor can sell this closet by merely suggesting it and describing its obvious advantages over the demoralizing unhealthy out-houses.



We guarantee this closet to be absolutely satisfactory in every way; and can make an attractive offer to one reliable builder in every town to act as our agent. The closet is guaranteed. You merely suggest it, and secure a good profit on every sale.

Now is the time to write for our proposition before the winter sets in. Wolverine Closets overcome the dread of winter.

Dail Steel Products Company

600 Main Street
Lansing, Michigan

Mr. Builder: Increase Your Income Right Now—This Month

Here's something right in your line—a Chemical Closet that you can sell to a home builder cheaper than a wooden privy and make a bigger profit for yourself. Here's something you can sell at odd times or turn over to your son or your foreman to sell.



RO-SAN Chemical Closet

An absolutely sanitary, odorless indoor closet that may be placed anywhere in the house. Abolishes the germ breeding out-door vault. A comfort and a convenience when there is no sewer connection. Germs killed by chemical. Easily emptied as the ash pit of a stove.

AGENTS WANTED

We want one live carpenter contractor in each town to act as our agent. Hundreds of builders are selling these fixtures. Good profits for little work. We help you sell them. Write today for complete details.

ROWE SANITARY MFG. CO.
111 Sixth Street Detroit, Mich.
Ask about the Ro-San Washstand. Hot and cold running water without plumbing.

Comfort Indoor Closet Odorless Sanitary Germ-Proof

No Sewer, No Waterworks, No Plumbing Needed
This modern home necessity is fast taking the place of the unsightly, unhealthy, inconvenient out-house in the back yard. Thousands now in use and all giving complete satisfaction. Can be put wherever convenient in the house. No odor whatever. Gives city convenience in the country or town.

Cost Less Than Out-House

Anybody can afford one. Saves those cold night trips out-of-doors. Impossible to get same amount of comfort for the money another way. Sold on 30 days' trial and under sworn guarantee to refund all money if not entirely satisfactory. Send for description and prices today. Be fair to your family.

AGENTS MAKE BIG MONEY EASILY

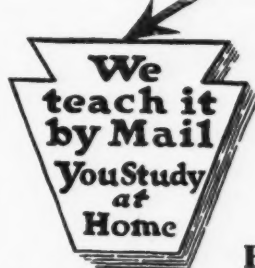
Comfort Indoor Closets sell themselves as fast as people understand about them. Contractors and carpenters are making big money by merely suggesting this closet. Write for details of our exclusive agency offer. Send postal now before somebody else gets your territory.

Comfort Chemical Closet Co., 311 Factories Bldg., Toledo, Ohio



DRAFTING IS THE KEYSTONE

to the bigger job for wide-awake, ambitious carpenters, bricklayers, foremen, superintendents, contractors and all men in the Building Trades.



\$45 Course FREE

Read the
Wonderful Offer
Here Made to You

Get the knowledge—the training—that will make you the Boss instead of the workman. Drafting is the foundation of all big engineering and building jobs. You can learn drafting in a short time in your own home by the "Chicago Tech." **New, Quick, Easy, Home-Study Course.** Your spare hours are enough. There is a bigger job (than you now have) waiting for you if you only had the training. Read our great offer, then sign and mail coupon today. Remember, there is only a limited number of these special **FREE COURSES.**

MEN WANTED For Big Jobs At Big Pay



CHARLES W. MOREY
President of the College
and Head of a Large Chicago
Firm of Engineers and
Contractors

On account of the rapidly increasing demand for trained draftsmen, this college has set aside a limited number of free scholarships and will give the regular \$45 course in

Mechanical Drawing Free

with any one of the Home-Study Courses named in the coupon below; this is in addition to the complete \$15 Drawing Outfit which is also furnished to students free. Take advantage of this unusually liberal offer today, as it will be withdrawn when the allotted number of Free Scholarships has been awarded. It costs you nothing to get full information. No obligation on you.

Study at Home. Hundreds of men are in daily attendance at this old-established college. In your own home you can do the

same work these men are doing, and the same experts that teach them will guide you toward the big-pay job. They will prepare your instruction matter. Your work is examined and approved by them. No books to sell. Live, up-to-date blue prints of work in actual construction.

This Complete \$15 Drawing Outfit and full In- structions in Me- chanical Drawing FREE



Mark "X" opposite work in which you are interested. Without obligation on you we will send full information.

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| —Architectural Drafting | —Building Superintendence |
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| —Plan Reading | —Reinforced Concrete |
| —House Planning | —Machine Drafting |
| —General Contracting | —Surveying (1077) |

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Address _____

Town _____ State _____

College or Home-Study Course _____

CHICAGO TECHNICAL COLLEGE
1077 Lake View Building, Chicago, Illinois

Curtis Service Makes Your Profits Sure

A popular
Curtis
Design



THERE is nothing uncertain about Curtis Woodwork. You do not have to waste time correcting defects. Our trade-mark on our products fully protects you.



A Curtis Door

1866 CURTIS WOODWORK

"The Permanent Furniture for Your Home"

We send Curtis Woodwork for you at the factory. Also every bit of fitting and work on the material possible is done. We deliver materials practically ready to put in place. And these deliveries are made on the day you want them.

If you will send us your name and address on a post card, we will put you in touch with a Curtis dealer. He will explain in detail the advantages of Curtis Woodwork and Curtis "On-Time Service."

THE CURTIS COMPANIES

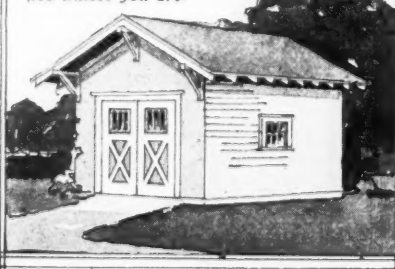
Service Bureau

1407-1507 S. Second St., Clinton, Iowa

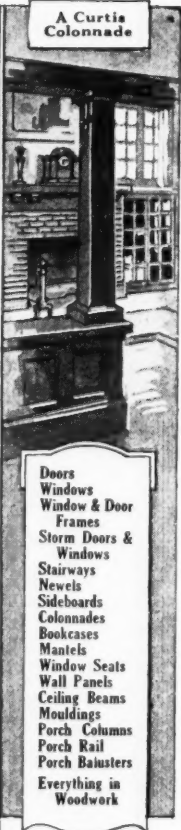
Manufacturing and distributing plants at
Clinton, Iowa Sioux City, Iowa Chicago
Wausau, Wis. Oklahoma City Detroit
Minneapolis Lincoln, Neb. Topeka, Kan.

Eastern Offices at Pittsburgh
and Washington

The makers of CURTIS Woodwork
Guarantee Complete Satisfaction to its
Users. "We're not satisfied unless you are."



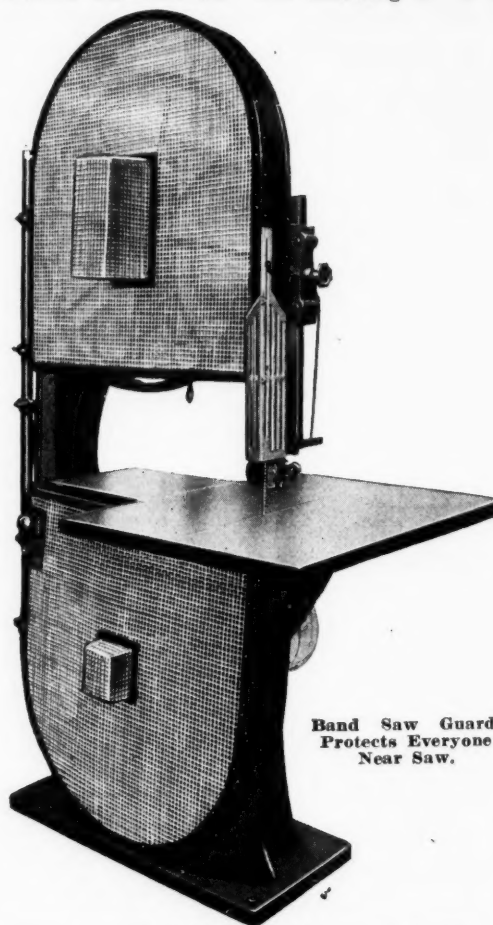
A Curtis Colonnade



Doors
Windows
Window & Door
Frames
Storm Doors &
Windows
Stairways
Newels
Sideboards
Colonnades
Bookcases
Mantels
Window Seats
Wall Panels
Ceiling Beams
Mouldings
Porch Columns
Porch Rail
Porch Balusters
Everything in
Woodwork

approval is now the final word in safety devices, as it is and has been in building materials.

We are in receipt of a fifty-six page catalog covering quite an extensive list of commodities in use by our readers that have been tested and found up to the requirements of the Underwriters' Laboratories. The following are a few that



Band Saw Guard.
Protects Everyone
Near Saw.

will interest you—scaffolding—machines—goggles—fire extinguishers—automobile locks—elevator inter locks—anti-slip treads—straight and trestle ladders, as well as guards for circular saws, cross cut, rip, band saws, etc.

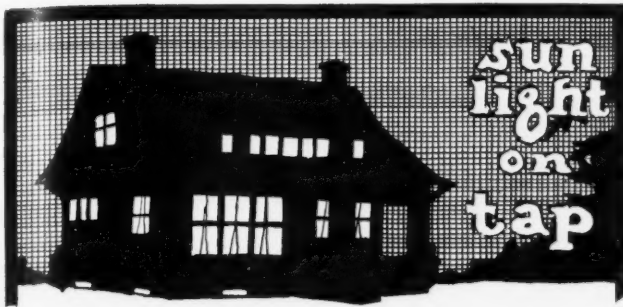
That employer who has a dangerous machine in operation who wishes to safeguard it because it is cheaper to protect old men than to secure new men or because he believes it is right to safeguard his employee can have a copy of the catalog at the cost of writing to the Underwriter's Laboratories, Chicago.

To show the protection given by labeled safety devices we illustrate a band saw guard. You note the automatic aluminum shield covers front and sides of saw—the steel band over the top of the wheel and the coverings of the hubs.

There is a strong mesh guard on the back of the wheel and an aluminum roller guide which prevents the saw from running off the wheel. This guard protects against injury of others as well as the operator of the machine. You note the thoroughness of protection given.

We urge all of our readers to carry casualty insurance as protection to themselves as well as their customers. But it is due the employee from the humanity standpoint to have protection where possible.

We would be pleased to have any of our readers that are interested in safeguarding any dangerous condition to advise us. We will undertake to put such inquiry into the hands of such a concern as will supply not only a guard but such a safety device as will best protect without effecting the service of the machine.



A Winner Proposition

Sell light plants for country homes. Over 180,000 families are using Acetylene Light Plants.

One contractor made \$500 last year selling Davis Acetylene Light Plants during the winter and in spare time.

No Investment Asked

This is an agency proposition that does not require risking your money.

We help you do the selling.

Ask for full description of the plant and our agency plan.

DAVIS ACETYLENE CO.
90 Prospect Street - Elkhart, Ind.



Contractor Agents Make Big Money!

Every country home, church, school and store, old as well as new, needs a JENNE Lighting Plant. Oil lamps, with their soot and smoke and smell, their trouble, inconvenience and danger, no longer satisfy intelligent people. Lighting plants installed inside the house are always dangerous and seldom efficient. This is why our contractor agents are coining money selling the



ACETYLENE LIGHT PLANT

"Sunlight from a Cistern"

Installed outside the house in the ground with pipe connections to every room, this system is absolutely safe. Its construction of steel and reinforced concrete (patented) appeals to everyone, for it makes the plant practically everlasting. The careful design, liberal dimensions, and the simplicity of the JENNE make it most economical and dependable.

It is easy to install. It is guaranteed for 15 years.

The modern JENNE System has NONE of the trouble, inconvenience and danger of other lighting systems, be they acetylene, electric, gasoline or kerosene, and it has all their advantages. There are no "come backs" when you install a JENNE. Thousands in use and every JENNE user is a booster.

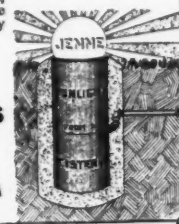
Passed by the National Board of Fire Underwriters.

Will you act as our salesman? We sell a complete, guaranteed lighting system; we carry the account; we offer terms that will suit your customers; we pay you a liberal commission.

Write for our Contractor Agent Proposition at once

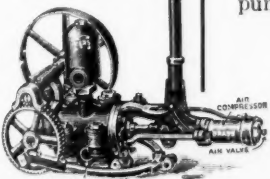
The Jenne Acetylene Gas Machine Co.

313 TRACTION TERMINAL BLDG., INDIANAPOLIS, INDIANA



Myers
Century

A
Combination
Hand and
Power Pump
Furnished
With
or Without
Air
Compressor



Myers Pumps for Every Purpose

Do you depend on a private well or cistern for your water supply? If so, MYERS PUMPS merit your consideration. A complete line of Water Lifters—including Easy Operating Cog Gear Hand and Windmill, Well and Cistern Pumps, Power Pumps and Working Heads for gasoline engine or electric motor operation, Hand and Power Hydro-Pneumatic Pumps for private water systems—that has 40 years' pump building experience behind it with a distributing agency of over 30,000 dealers.

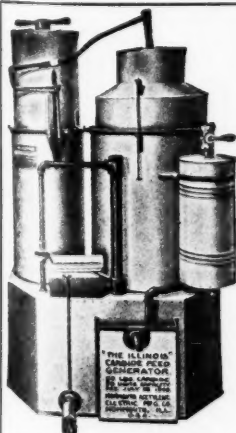
Write us about your Water Supply for the Home, Farm or Ranch. Our Service Department is yours to command for information. Attractive booklets gladly mailed.

F. E. MYERS & BRO. 360 ORANGE STREET
ASHLAND - OHIO
ASHLAND PUMP AND HAY TOOL WORKS

Small
Power
Working
Head



Other Myers Lines
Hay Tools, Door Hangers
Store Ladders, Etc.



Lighting Systems

that are Safe, Simple, Reliable and Efficient

Illinois and Monmouth Pit Generators

represent the pinnacle of Perfection in Lighting Systems. Their convenience and fine lighting facilities are appreciated by every rural resident. They are very easy to sell and yield you a handsome profit. We give Carpenters and Builders special Prices and Discounts and help them close sales by sending all prospects, handsome booklets and literature showing the desirability of our Generators.

Simply send us the names of persons who might be interested; we'll work together and you act as our direct agent installing and selling them. In the meantime learn more about Illinois and Monmouth Generators by reading over our Catalogue and Proposition—Write

Monmouth Acetylene-Electric Manufacturing Co.
Dept. AB. MONMOUTH, ILL.



This Marvelous Lighting System is perfectly simple to install; surprisingly inexpensive to maintain, and will flood your home with a perfect

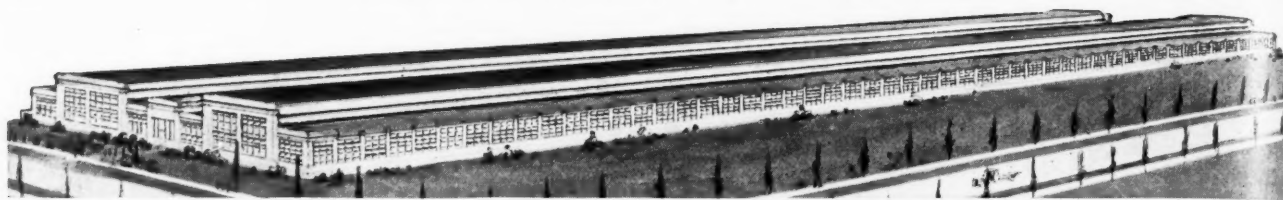
Clear and Brilliant Light at a nominal cost.

THE TURES LAMPS and LIGHTING SYSTEMS are without a question the simplest, most complete and efficient on the market.

ALWAYS READY and DEPENDABLE—no more smoke, trouble and worry of the uncertain kerosene lamp—make and burn its own gas out of common gasoline, developing from 400 to 1200 candle power per lamp.

AGENTS wanted—everywhere. For prices, territory, etc., write to

THE TURES MFG. CO.
386 Sixth Street Milwaukee, Wisconsin



Fireproof Single Story Factory Building of Domestic Engineering Company.

Huge One-Story Concrete Shop

The factory building of the Domestic Engineering Company, at Moraine, a new suburb of Dayton, Ohio, is unique in many ways. It is the result of a thoro and painstaking study of the production problem of this company which manufactures Delco-Light, an independent electric light and power plant for farms, suburban homes and buildings, and in

concrete, with brick enclosing walls and steel sash doors and monitors.

Owing to the extreme width and length of the building, the question of providing ample light and ventilating facilities was a serious problem. Careful study resulted in the adoption of a roof construction, recently used with success in buildings where similar conditions occur, and where the

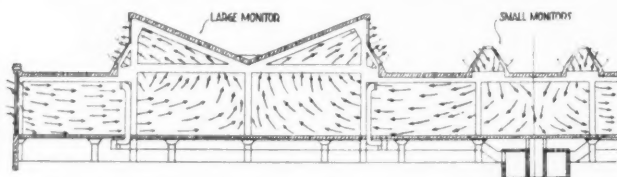


Fig. 1. Circulation Thru Delco Factory in Summer.

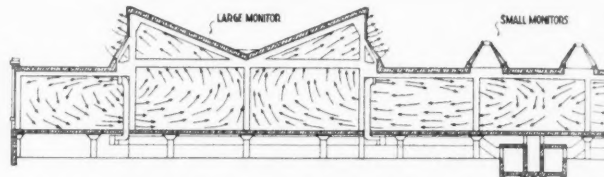


Fig. 2. Air Circulation During Winter in Delco Factory.

fact, for every place where electricity is not available from the usual sources.

The fact that a large level tract of land was available determined the use of a one-story type of building, thus avoiding the waste of time and upkeep which necessarily follow in the building of more than one story, where stairways, elevators, etc., are required.

The building is 270 feet in width and 1000 feet in length, which gives a total floor area of over six acres. It is of fireproof construction thruout, the floor being of reinforced

saw-tooth type of construction had proved inadequate.

For the first time, this type of construction is to be carried out in reinforced concrete, structural steel having been used heretofore. No structural beams are to be used in the building. The walls of the structure are almost entirely of steel sash, with ventilators. This provides the maximum amount of light and ventilation from that source. The roof is of special design of reinforced concrete and hollow tile, thus providing maximum insulating qualities. The smooth inside surface

(Continued to page 132.)



Merchant's Metal "Gothic" Shingles

Made of Sheet Metal, light in weight, fire and storm proof, perfectly reliable, durable and also ornamental. Designed for Bungalows, Cottages, Churches, Railroad Stations, etc. Send for prices.

Fire Retarding "Star" Ventilators
With Patented Gravity Damper

Provide good ventilation and prevent spread of flames upward through the roof. No down draughts. Storm proof, durable and attractive. Manufactured in Galvanized Steel, Galvanized Iron, Sheet Copper.

Evans "Almetl" Fire Doors and Shutters
"Merchant's Old Method" Roofing Tin

Merchant & Evans Co.

New York	Philadelphia	Chicago
Baltimore	Cleveland	St. Louis
Atlanta	Wheeling	Kansas City

GET ALL THE PROFIT

**Shipped
Ready to
Install**

**Easy to
Erect**



Your reputation and future orders depend upon the equipment you recommend. Don't take a chance. Get the present and future profit by recommending and equipping the barns you build with

O-K Cupolas

Every one you erect adds to your reputation. They solve the barn ventilation problem and sell themselves. **O-K Cupolas** are neat in appearance. Bird, storm, rust and rot proof. Made of heavy galvanized steel. Cost no more than the ordinary kind.

Special Prices to Contractors and Builders where we are not represented

Write for full particulars on this and other money-making specialties.

Phillip Bernard Co.
2400 Floyd Ave. Sioux City, Iowa

Build Your Own Grandfather's Clock

with our help

With the blue prints, instructions, finishing material, etc., we furnish, any handy man can build his own Grandfather's Clock. We sell you the works, dial, weights, pendulum, and everything you need at prices so low as to surprise you. Works complete, \$5.00 each; others with chimes, all prices.

Here's winter work you can turn to good profit. Make duplicates for your friends. Our designs are clear cut, attractive and salable. Write for our free offer on the drawings, etc.

CLOCK COMPANY
1655 Ruffner St. Philadelphia, Pa.





When you require—

METAL WINDOWS BEARING UNDERWRITERS' LABEL
FIRE DOORS BEARING UNDERWRITERS' LABEL
SKYLIGHTS
VENTILATORS
SKYLIGHT AND WINDOW GUARDS
METAL CEILINGS AND SIDE WALLS
CEILING CENTERS
MARQUISE OR CANOPIES
BASEMENT SASH AND FRAMES
CORNICES
METAL SHINGLES—SPANISH TILE
GALVANIZED ROOFING AND SIDING
METAL SIGNS—LETTERS—NUMERALS
ORNAMENTS—CRESTING—FINIALS
WALL TIES
METAL LATH—CORNER BEAD
COAL CHUTES—PACKAGE RECEIVERS
WALL SAFES
FIRE ESCAPES
ROOF GUTTERS
CONDUCTOR PIPE—CONDUCTOR HEADS
SPECIAL DETAILS
IN SHEET METAL CONSTRUCTION, ETC., ETC.

—CONSULT WILLIS

These products as well as numerous others are shown and described in our catalog No. 7. This catalog is complete in every respect—170 pages full of information—and should be in your files for reference purposes. If you do not have a copy, write for it today. It will be mailed to you promptly upon request. Dept. B

Willis Manufacturing Co., Galesburg, Ill.
Everything in Sheet Metal Building Materials

Royal Ventilators



Farmers know the value of ventilation. Put **Royal Ventilators** on every barn you build and you have done your best. They give satisfaction and please clients.

The **Royal** will stand any strain; proof against storms, leaks, birds and insects; exerts a steady up-pull on foul air and introduces fresh air without down-draft. Double Cone an efficient feature.

Made for every purpose. Will please in construction, appearance, efficiency and price. Send for our Catalog.

ROYAL VENTILATOR CO.
417 Locust St. Philadelphia, Pa.

HIPPED TURRET SKYLIGHT

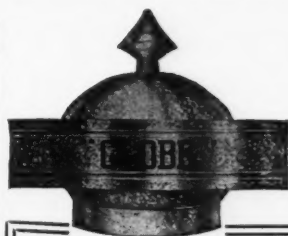


with swinging sash. Size 24" high; all windows on each side made to open at the same time. Operating device securely locks them open or closed.

The Skylight is of guaranteed quality. You can use it on any of your buildings with the assurance that it will stand the wear. Watertight. Can be set up in a moment by an inexperienced man.

Write for our Skylight Catalog and Prices

Galesburg Sheet Metal Works - Galesburg, Ill.



SERVICE

"Globe" Ventilators

have given over 30 years of satisfaction on all classes of buildings where perfect ventilation is required, because they are scientifically correct in principle and construction.

That's a reason why you should install "GLOBE" Ventilators. Send for Sizes and Prices to Department F.

Globe Ventilator Co.
TROY, N. Y.

CHIEF ALL-STEEL CUPOLA

New-improved, scientifically designed ventilating cupola for all buildings. Up-to-date in design, material and construction. Used and approved on hundreds of farms. Made of heavily galvanized steel with base strongly braced. Can't rust, rot, or blow off. Absolutely storm-proof and bird's-nest proof.

Easy to Install—Sure to Please Your Customers

Chief Cupola saves time and labor installing—base bolts directly to roof and cupola bolts to the base. Only six bolts needed. Meets all requirements—insures adequate ventilation—satisfies all users. Write for full description, prices, etc.

Shrauger & Johnson Co.
430 Walnut Street, Atlantic, Iowa



Monitor Cupolas

BUILT TO VENTILATE

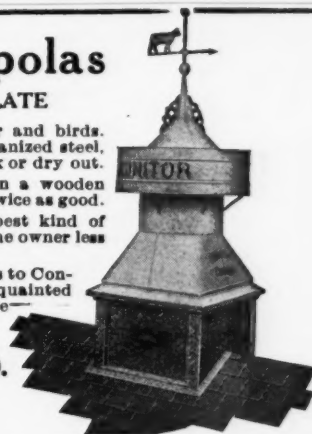
Proof against wind, weather and birds. Made of the best grade of galvanized steel, the Monitor will not rust, crack or dry out.

It will circulate more air than a wooden cupola twice its size, and looks twice as good.

Always on the job with the best kind of service, the Monitor will cost the owner less every day it is in use.

Write for our special discounts to Contractors and Builders. Get acquainted with the cupola that will make the most money for you.

B. F. Lichty & Sons Co.
Station A
WATERLOO, IOWA





Bath room beauty

KOHLER Bath Tubs are chosen for the finest hotels and apartment buildings, such as the Edgewater Beach Hotel, Chicago.

This is because of the unequalled beauty and excellence of

KOHLER WARE

—Always of one quality—the highest

But it is not for the very high-class buildings only that KOHLER Bath Tubs, Lavatories and Sinks are most suitable.

KOHLER WARE, with its hygienic designs and purest white enamel, is in wide and rapidly increasing demand for the less expensive houses, apartments and bungalows.

The permanent trade-mark "KOHLER," to be found in faint blue in the enamel of every KOHLER Bath Tub, Lavatory and Sink, is our guarantee of excellence.

Builders will find that KOHLER products are designed to make installation easy.

"It's in the Kohler Enamel"

KOHLER CO.
Founded 1873
Kohler, Wis., U.S.A.

BRANCHES

Boston	New York	Philadelphia	Atlanta
Pittsburgh	Detroit	Chicago	Indianapolis
St. Paul	St. Louis	Houston	
San Francisco	Seattle	Los Angeles	London

The "Viceroy," Plate V-14
(Patent Applied For)



gives an excellent light diffusion without the necessity of plastering. Because of the unusually large and unbroken area, the concrete floor and roof slabs are provided with expansion joints to compensate for the varying temperatures and avoid the danger of the floors and roof cracking.

To provide supports for shafting, machinery, etc., iron inserts are to be placed in all the flat ceiling surface and the under side of all beams. Seventy-six thousand five hundred inserts will be required for the building. The wearing surface of the cement floor, thruout, is to be especially treated to produce a wear proof and dust proof surface.

Running the entire length of the building are two large and two small monitors occupying about one-half the entire roof area. The monitors consist of steel sash glazed with wireglass and operated by electric motors, in units of 300 feet each, giving the greatest flexibility in opening and closing the ventilators, as varying weather conditions will require. The inside surfaces of the large monitors are so designed as to act as diffusing surfaces to distribute the light uniformly. A feature of this type of construction is that an object in any part of the building receives light from both sides, thus preventing shadows. The natural air circulating system of this type of construction will be understood by reference to Fig. 1. This shows the natural air circulation in summer. Due to the volume of air in the large monitors, at a higher plane than the small volume of air in the small monitors, the natural air circulation, indicated by the arrows, is obtained. It is claimed for this construction that it will maintain a temperature several degrees lower than the outdoor temperature.

The air circulation, in winter, is illustrated by the arrows in Fig. 2. It will be noticed that the air currents are in the same general direction at both seasons. In winter, it is only necessary to close the small monitors and regulate the large monitors to suit the rapidity of circulation desired.

In summer, the heating system may also be used as a cold air system, so that an ample supply of cool air is insured regardless of the outside temperature.

Steam for heating will be supplied from a separate boiler room which will be erected on another site, where fresh air will be brought in from the outside and thoroly cleaned by passing it thru an air washer, and heated by indirect radiators located in the basement, and automatically controlled by thermostats. To keep the air at the desired temperature at all times, large supply fans will force this air thru tunnels extending the entire length of the building, and to lateral branches that will distribute the air uniformly to all parts of the building.

The floor is built from 3 to 5 feet above the ground, leaving sufficient space beneath for heating and ventilating systems, plumbing, wiring, conduits, etc. Electricity will be used exclusively for lights and power.

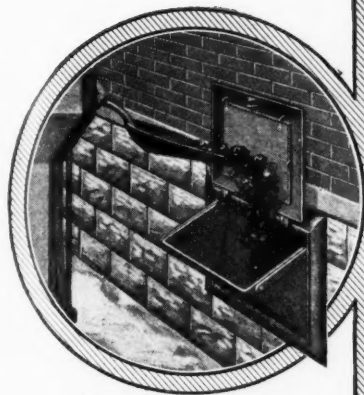


Speeding up Large Foundation Work with Portable Concrete Mixers

The Chicago Junction Railway Company has under construction at 39th and Canal Streets, Chicago, a large general purpose warehouse. This structure is located in what is known as the "Central Manufacturing District," which is a rapidly developing manufacturing and mail order merchandising center served by this railroad.

The building was designed by S. Scott Joy, of Chicago, architect of the district, and covers a ground area of 287 by 200 feet. The structure is five stories in height with a deep basement. The construction is flat slab reinforced concrete with red face brick curtain walls and terra cotta trim. A feature which adds much to the building architecturally is a tower of pleasing design. The floors are designed for heavy loads, and railroad switches enter the center of the building at the rear on the first floor level, affording the best

(Continued to page 134.)



CONTRACTORS AND BUILDERS, INVESTIGATE THE

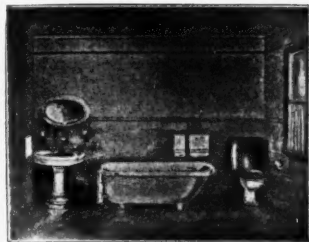
Majestic Coal Chute

Keeps the coal man from marring the sides of your home, protects your walk, flowers, lawn and shrubs. A glass door serves as a window, giving splendid light to the basement. It locks from the inside and is burglar-proof. It is extra durable, has a heavy steel body, semi-steel door frame and boiler plate hopper. Every new home you build should have one.

Write for Catalog describing the Majestic Coal Chute and other Majestic Specialties, Garbage Receivers, Milk and Package Receivers, all-metal Basement Windows, Rubbish Burners, Street and Park Refuse Cans, Metal Plant Boxes, Pipe and Pipeless Warm Air Furnaces, etc.

THE MAJESTIC CO., 610 Erie St., Huntington, Ind.

Plumbing, Heating and Pneumatic Waterworks Supplies at Wholesale

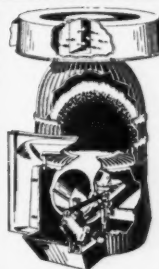


When in the market for Plumbing, Heating and Pneumatic Waterworks Supplies and you wish to

Save 20 to 40%

on every article, write for my free illustrated Catalog. The only house that sells first-class guaranteed goods at wholesale prices direct. Shipments are promptly made from a very complete stock. Small orders are as carefully handled as large ones.

B. B. KAROL, 800-802 S. Kedzie Ave., Chicago, Ill.



Cut-Out View of New-Feed UNDERFEED Furnace

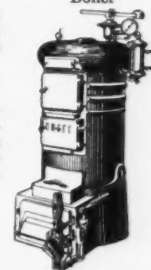
"From Overfed to UNDERFEED"

Over 35,000 furnace and boiler users have changed from the old-fashioned top feed—always "overfed"—to The Williamson New-Feed UNDERFEED. Fuel saving of 1/3 to 1/2 is guaranteed.

Get Free Book Now

A postal brings illustrated book to any carpenter, builder or contractor. Write that card today—learn how you can guarantee your customers big fuel savings by recommending the UNDERFEED.

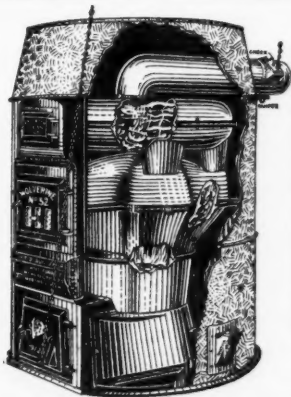
UNDERFEED Boiler



The Williamson Heater Co.
67 Fifth Ave. Cincinnati, O.

WOLVERINE FURNACES

and the WOLVERINE SYSTEM of Heating and Ventilating are something you want to investigate. You buy direct from our factory at manufacturers' prices—furnace, registers, cold air faces, pipe and fixtures already cut and ready to put together. We send our own mechanics to install complete if you are in our local territory. If not we send complete plans and specifications that any good mechanic can follow.



We have been making furnaces and nothing else for 36 years. Our experience is at your command.

It costs you nothing to get our plans for your building and receive our written proposal.

Wolverine Furnaces are constructed on scientific principles which makes them durable and economical in fuel. Easy to clean and operate and sold under the most liberal guarantee ever given with heating apparatus. Write for large 32-page illustrated catalog that describes and shows these furnaces. It is FREE, a postal card will fetch it. Ask for catalog No. 63.

MARSHALL FURNACE COMPANY
12 Dobbins St. - - Marshall, Mich.

Heats Ventilates Satisfies

"The Modern Way"

PIPELESS FURNACE

Cash in on the cold weather this winter by selling and installing these furnaces.

They practically sell themselves. All you have to do is explain the advantages of "The Modern Way" heating system. They so far outweigh the merits of the old system that when once explained, they will clinch the heating contract on the spot, and you get a nice profit. Easily installed in a day's time, without special tools or furnace experience.

We guarantee every furnace we put out; send full instructions telling how to install each one properly; and give you exclusive territory. Write today for our proposition.

The Modern Way Furnace Co.
Offices, Shoaff Bldg.
Fort Wayne, Ind.



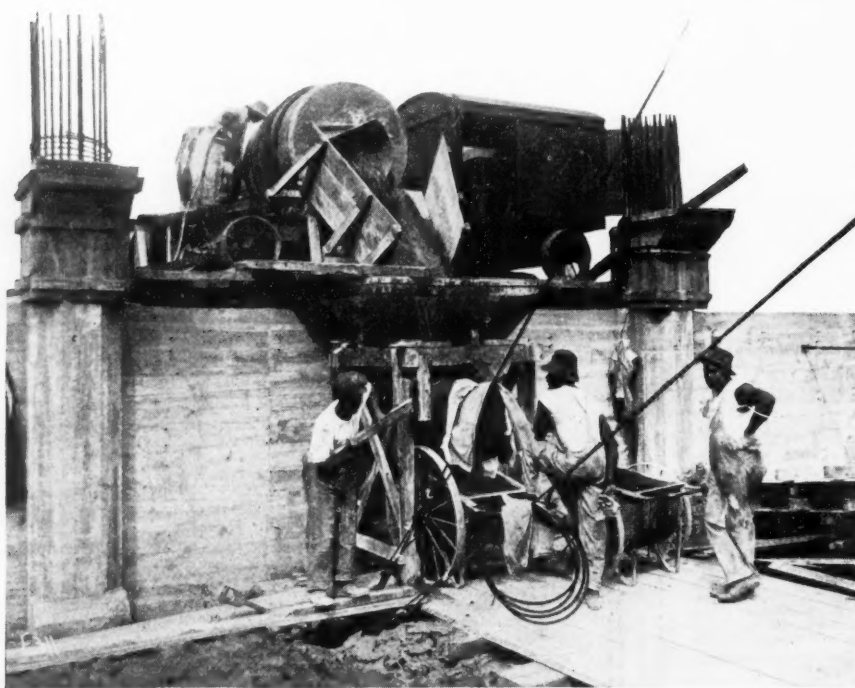
terminal facilities.

The building is being constructed by George A. Fuller Company, who are using three distributing towers as the principal means of conveying the mixed concrete. Time is an important factor in the construction of this building, and as a means of speeding up the work the distributing towers were supplemented by portable mixers. For mixing the large

quantity of concrete required in the footings and walls for the street foundation and the footings for the numerous central columns, there were used two of "The Standard" low charging mixers, one of 10 cubic feet and the other of 16 cubic feet capacities. After the street foundation walls were completed the mixers were mounted directly on these walls for supplying concrete for central foundation footings.

When placed in this manner the mixers discharged directly into hoppers from which the concrete was gated into carts for distribution. The mixers were moved along the walls as the work progressed, so that it was not necessary to wheel any of the concrete a great distance. The accompanying illustration is a photograph of the discharge side, showing the manner of discharge from mixer to hopper and gating the concrete from hopper to carts.

In explaining the use of these portable mixers as a means of increasing the rapidity of placing concrete on this large construction job, Mr. C. A. Sawyer, Jr., Chicago manager of the George A. Fuller Company, said that he was first among the engineers of his company to use the portable mixers. In the construction of the Harvard University Dormitory buildings the concrete had to be placed over a large area and for this purpose he used "The Standard" portable mixers and moved them along as the work progressed. The economy effected was very great.



Standard Mixer Discharging Concrete Into Hopper to be Distributed in Central Foundation Footings of Warehouse.

"Father of them All"



The Great Bell

The Original Pipeless Furnace

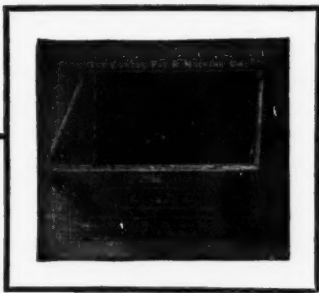
We have thousands in use. Sizes, styles, and prices to suit all, \$38.00 to \$94.00.

This furnace will heat any one or two-story building in the most efficient manner; with the least effort, and the lowest relative cost. It is made for the building where a furnace is needed, but where the cost has been prohibitive.

Our methods of production and sales have reduced the cost so low that no builder can afford to overlook our proposition.

Write for our catalogs, describing the various styles, prices and specifications of the Great Bell Furnace. We guarantee them to be and do all we claim for them in both catalog and correspondence.

American Bell & Foundry Company, Northville, MICH.



The Man Who Builds Is the Man Who Knows

He can testify every time to the value added to a building by the use of

CANTON COAL CHUTES

They are in popular demand with most builders because they are easy to install, please the owner, and the cost is small.

They are mighty well built, too, and come in three handy sizes, and open either on the inside or outside.

Write for our catalog, "B-4," showing our line of Builders' Iron Work.

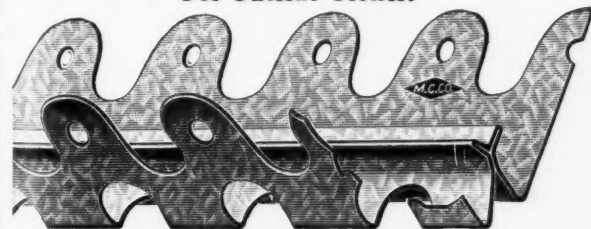
Canton Foundry & Machine Co.
Canton, Ohio

"Superior" Corner Bead

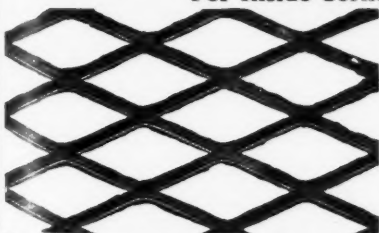
Made from galvanized open hearth sheets and furnished in 5, 6, 7, 8, 9, 10 and 12-ft. lengths.



For Outside Corner.



For Inside Corner.



"Milwaukee" Diamond Metal Lath

gives work that is fire-proof, vermin-proof and free from cracks or stains.

Milwaukee Corrugating Co., Milwaukee, Wis.
Branch at Kansas City, Mo.

Bargain for the Contractor

Let me send my offer on this "Contractor's Typewriter"



No. 5 OLIVER

It is a visible writer—just the machine you need—specially designed to meet the exacting requirements of your business.

It is easy to operate, you can learn to operate it in 10 minutes.

It requires no care, it will do your work for a lifetime. We guarantee it. It is the latest Model 5, with inbuilt Tabulator and Back-spacer.

This Contractor's and Material Man's Model has Keyboard arrangement as shown below.



Note carefully not only the fractions and figures, but characters used in Bills of Material, etc., are all on one shift, such combinations as: '400' $\frac{1}{2}$ x 4 x 16' @ \$30.00 = \$12.00' reproduced with one operation of the shift key.

The automatic tabulator makes this exacting work as easy as letter writing. Just press the button and the paper automatically glides to the correct spot so that quantities group themselves under quantities, dimensions under dimensions, prices under prices, etc.

Think of the enormous advantage of the typewritten estimate. Think of the enormous saving of tedious labor. Then remember that this special Contractor's Model is also ideal for ordinary correspondence and the many other uses to which a typewriter can be put.

Free Trial—Nothing Down

My offer is to send this typewriter to you, that you may decide by actual trial whether or not you desire it. No advance payment is required and you assume no obligation.

Cut Price—Terms 13c a Day

I will make you an extremely low price on this machine. A price that has never been made on a typewriter of this quality.

No advance payment is required. If you decide to keep the typewriter, you can pay a little each month, about 13 pennies a day.

No interest, no extra charges, no chattel mortgages, no red tape—everything is made easy.

Get This Free Information

It will not cost you anything to learn about this offer. Just send your name and address and I will send you full particulars. No salesman will call on you, you will not be urged to buy.

Do it now. I have but a limited number of these "Contractor's Model" of the Oliver, and if you have any need for a typewriter do not neglect to send for this best of all typewriter offers. A coupon is attached for your convenience. For your own advantage mail it today.

Yours very truly,

Typewriters Distributing Syndicate
Dept. 3138, 1510 Wabash Ave., Chicago

Mail this for All the Facts

Typewriters Distributing Syndicate,
Dept. 3138, 1510 Wabash Ave., Chicago.

Gentlemen: With the understanding that I am not purchasing anything or obligating myself in any way, you may send me your bargain offer on "Contractor's Model Oliver."

Name

Address

Fall Profits

Now that the hint of cold winter winds has been felt to some extent thruout that part of our country which is not characterized by "summer the year around," the contractor and builder is called upon to prepare homes for the winter

which will soon be here. During this season the contractor or builder who has something to say to his clients about a reduction in the coal bill or an increased measure of comfort to be gained without undue expense, will find a ready audience. Many contractors and builders realize the possibility of profit in equipping themselves to furnish material which will insulate homes against the low temperatures of the winter season. These men are looking into the offers made by firms manufacturing such material and are securing the right to sell and install these specialties in the territory allotted to them.

The Diamond Metal Weather Strip Company, 626 Kerr Street, Columbus, Ohio, is on the lookout for responsible men who can install weather strip on the doors and windows of the buildings in their vicinity. This company offers a most liberal agency proposition and is willing to lend every assistance in their power to get their agents started in this well paid work.

The sale and installation of weather strip is easily worked into other fall building activity and it presents a logical means of starting a campaign against what a great many builders have come to consider as a "slow" season. Readers who are interested in this proposition should ask the Diamond Metal Weather Strip Company to furnish them with the particulars relating to the special features of Diamond Metal Weather Strip and the ease and simplicity with which it may be installed.



The Name WITTE Will Never Appear on anything but Highest Quality Engines

ED. H. WITTE

Saves \$10 to \$200 on an Engine

Write today for free book, "How to Judge Engines;" 90-day trial offer; 5-year guarantee; Easy payment plan; complete price list on all Kerosene, Gasoline, Naphtha, Distillate and Gas Engines in 2, 3, 4, 6, 8, 12, 16 and 22 H.P. sizes in Stationary, Hand Portable, and Saw-rig types.

—Ed. H. Witte.



WITTE Kerosene Engine

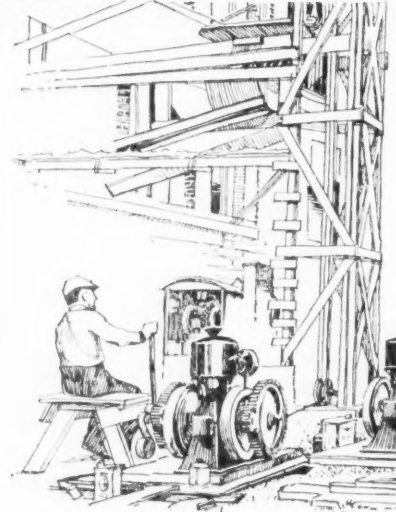
Also made in other styles to operate on Gasoline, Naphtha, Distillate or Gas, and in Stationary, Hand Portable, and Saw-rig types.

I AM proud of my name and proud of my engines. After the name "WITTE" has had a clean, unblemished record for 47 years, how could I do else than try to build the best engines and do business in a clean, honorable way? It is my good fortune and your good luck that I am able to sell such high-grade engines at such low prices. My own private, natural gas well to furnish free power; my great factory equipment; my having no interest to pay on notes, mortgages, bonds, etc., is to your advantage.

When a postage stamp may save you from \$25 to \$200 on an engine, isn't it worth while to write for my catalog? You can buy an engine direct from my factory at my low factory prices.

To give you an idea of the difference between ordinary retail prices and factory prices, I want to tell you that until I changed to my present selling plan, my engines would have cost you double present prices. My business is so large now that if I can make only \$1 clear profit on an engine, I can buy a good farm each year. Let me prove to you right on my own farm the worth of my engine.

WITTE ENGINE WORKS, 1773 Oakland Ave., Kansas City, Mo.
1773 Emaire Bldg., Pittsburgh, Pa.



From the Foundation

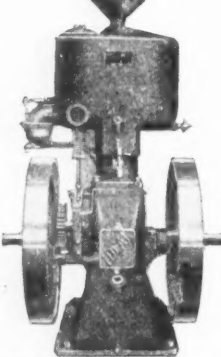
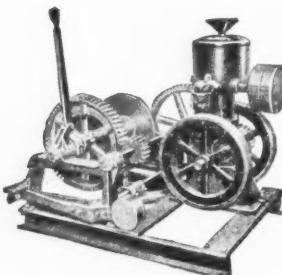
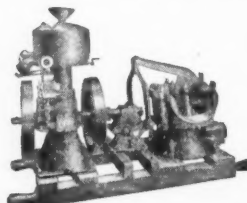
"Idealized"

Safety—speed—dependability—low running expense all goes with Ideal powered units.

For the contractor, builder or carpenter there is an Ideal rig ready for the job.

- and they certainly are some workers.
- you can always be assured of that extra speed with Ideal rigs.
- you can quickly note its effect on the work.

Ideal powered units are for the men who want the best—first and last.

Are you one? Get some information now—book 516.

Ideal Engine Co.
R. E. OLDS, Chairman
Lansing, Michigan

Stearns

No. 10



- try
this-

Scraper on Your Floors at Our Expense

Here's a Scraper that scrapes clean and smooth. In the corners, close up to the walls, and scrapes without those wavy lines so often caused by "chatter." Our knife with double edge wears twice as long as any other Scraper knife. Our adjustable handle, rubber tires and the way the weight is thrown on the knife are all exclusive features of the Stearns No. 10.

We don't ask you to "beware of other Scrapers," but we do ask you to accept this machine on a fifteen day FREE TRIAL OFFER, so you may "compare it with other Scrapers," for by test the Stearns is best.

There are fifteen days in which you can test its easy running, smooth shaving and sturdy qualities at our expense.

Write us about it.

Sold by dealers, direct from the factory or on fifteen days' trial. Particulars will interest you.

E. C. STEARNS & CO.

500 Oneida St.

Syracuse, N. Y., U. S. A.

A REAL SERVICE ENGINE

For contractors power outfits. An engine of advanced design, with doughty construction, that takes up less room and weighs less, one that starts easily and runs as long as you want it to, at a low fuel cost, one that is simple and easy to operate, without any complicated parts or adjustments.

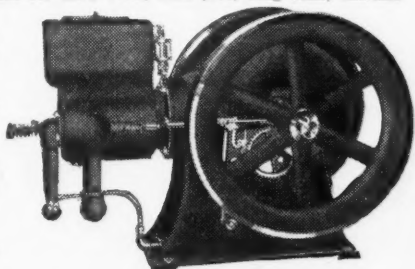
THE BROWNWALL

An engine that is built for hard work, rush jobs, long runs, extreme weather conditions, inexperienced operators, and all, and one that will survive all this and be ready always for more.

Write for Catalog
"A"

**THE BROWNWALL
ENGINE & PULLEY
COMPANY**

1200-1240 4th Street
HOLLAND, MICHIGAN



The Circulation of AMERICAN CARPENTER AND BUILDER IS GUARANTEED

We are Members of
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A Sworn statement in detail will be sent to
anyone upon request.

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REG. U.S. PAT. OFF.
and **OUTFITS**

Over 75 different kinds of power outfits, each the handiest, most economical source of power known. Write for our book

"Reliable Power"

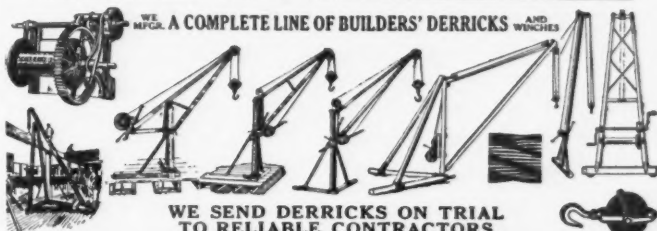
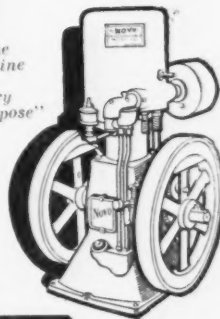
It tells you the advantages of standardizing power with Novo Engines. You'll find it worth reading.

NOVO ENGINE CO.

Clarence E. Bement, Sec. & Gen. Mgr.
605 Willow St., Lansing, Mich.

Furnished to operate on gasoline, kerosene, alcohol or distillate; 1-15 H. P.

NO LAMP
NO FAN
NO FREEZING
TROUBLE



WE SEND DERRICKS ON TRIAL
TO RELIABLE CONTRACTORS

Our Motto is SATISFACTION OR DERRICK RETURNED

Write for circular No. 2 with illustrations, descriptions and best prices on our complete line. The Sasgen Builders' Derricks are built of best Crucible Steel and Malleable Iron Fittings, which makes them light, strong, safe and durable. The derricks will please you and probably more than pay for themselves on the first job. Get one on trial.

SASGEN DERRICK CO., 2057 N. RACINE AVE.
CHICAGO, ILL.

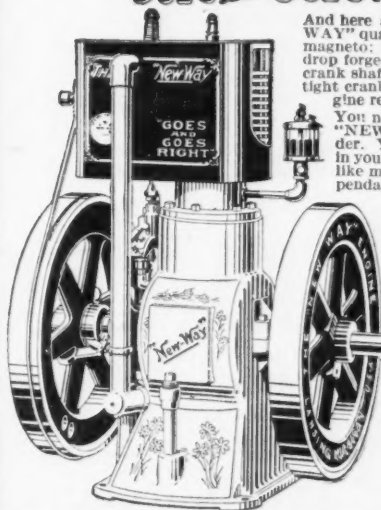
The "New Way" is a Powerful Engine

Adapted to All Contracting Purposes

POWER—that's one of the first things the contractor wants—the "NEW WAY" is the most powerful engine made for its size and weight. The direct cooling feature eliminates bulky and heavy water or hopper tanks. No leaks or packed joints. No freeze-ups and no overheating. All the power generated is used—there's none lost, for the reason that the cylinders of the "NEW WAY" are ground to perfect size—that means down to a thousandth of an inch. From two to three more piston rings are used in the "NEW WAY" than in ordinary engines. The valves are made of the finest metal and fit perfectly. Such materials and workmanship mean perfect compression—and compression is power.

THE "New Way"

"GOES AND GOES RIGHT"



And here are other exclusive "NEW WAY" quality features: High tension magneto; high efficiency carburetor; drop forged steel connecting rods and crank shaft; enclosed, dust-proof, oil-tight crank case and many other engine refinements.

You need never worry about the "NEW WAY" getting out of order. You know what that means in your business. It isn't "cranky" like most gas engines—it's a dependable, reliable, economical machine that "GOES AND GOES RIGHT" before it leaves our shipping room and, it's Guarantee is for life.

"NEW WAY" Engines built in all sizes and types, for all purposes, from 1 to 12 H. P.
Send for Catalog No. 41.

**The "New Way"
Motor Company**
10 Oak Street
Lansing, Michigan
U. S. A.

Change in Chain Belt Mixer Department

The Chain Belt Company, of Milwaukee, Wis., has appointed Mr. C. F. Messinger manager of their Concrete Mixer Department.

Mr. Messinger has for years managed the Advertising Department and is thoroughly acquainted with the mixer business. He will take charge at once and will augment the service feature which has always accompanied Chain Belt mixers.

Mr. Messinger is a graduate of the Sheffield Scientific School of Yale University and is well known by mixer men throughout the country.



The Origin of Floor Sanding Machinery

It was about fifteen years ago that the method of surfacing wood floors by the sanding process was first thought of.

It was while the Natural Science Building of the Leland Stanford University, located near San Francisco, California, was being built. Up to that time all the floor surfacing was done by the hand method of scraping. In fact the floors of the Natural Science Building of this great California University were to be surfaced by the same old process, but an unusual condition arose at that time. The contractor who was to construct the building figured on \$6000 to cover the floor surfacing. Through an oversight when his bid was placed the item of \$6000 for the floor surfacing work was not included in the total and in fact was not discovered until it was too late to withdraw his bid.

The contractor went to Mr. J. H. Prugh who was a practical man in the floor surfacing line and who had a vast amount of experience in doing floor surfacing under contracts on a large scale all over the United States. The contractor employed Mr. Prugh to devise some means whereby



The "Big American" Self-Propelled Floor Surfer.

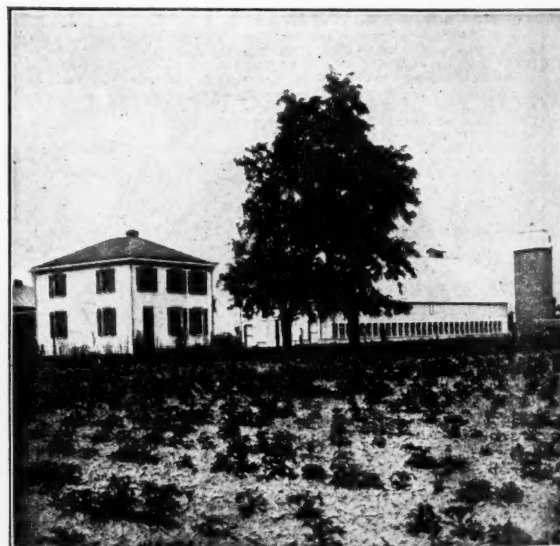
the floor surfacing work on the large building that was under construction could be done at a much smaller expense than hand scraping. Mr. Prugh set to work at once to devise some mechanical means for doing the work and after months of planning he decided on constructing a machine with two rolls each 24 inches long and about 8 inches in diameter which would be covered with garnet paper, revolving at a high rate of speed. This would surface the floors more rapidly than scraping by hand. This machine was constructed in a very short time and a 5-hp. electric motor secured for operating it.

While the machine was a rather crude affair it did the work

(Continued to page 140.)



Two Silos, each 22x45 feet, on Ranch of R. M. Whitehead, Granbury, Texas



Silo, 16x35 feet, on Farm of Irving Gaulding, Richmond, Va.

KALAMAZOO GLAZED TILE SILO

Today send for sample. Fire and frost proof, no paint, no cost for upkeep, no rust, no decay, no hoopage or guy-wires to look after. No capital required as we price them at your home town on any steam railway in the United States.

SILO FEEDING AND INVESTMENT COMPANY Dept. 48 Kalamazoo, Mich.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



Build Distinctive Houses

—homes and buildings that are *different* from the *ordinary*. It pays. Whitney Casement Window-Hardware will help you. With it you can install artistic, distinctive casement windows, not only in the porches and sun parlors, but in any or *all* rooms in a house.

They'll be *better than the ordinary sliding windows* for protection from cold and storms—they'll be absolutely tight when closed and they'll afford many advantages and conveniences that you can't get with any other type of window. Here is a big improvement over the ordinary hinged casement window. Use any style sash. We sell only the patented hardware.

It's well worth your while to write for full information and portfolio showing many artistic casement window effects.

If you live west of the Mississippi, address

Whitney Window Corp'n,
309 S. Fifth St.,
MINNEAPOLIS, MINN.

If you live east of the Mississippi, address

H. E. Holbrook Co.,
446 John Hancock Bldg.,
BOSTON, MASS.



WHITNEY
CASEMENT
WINDOW HARDWARE



DEVOE THE GUARANTEED PAINT AND VARNISH



EXACT
FORMULA
ON EVERY
CAN

GUARANTEES
PURITY AND
SATISFACTION

PROTECTS against "come-backs" the man who specifies, the man who sells and the man who applies.

INSURES satisfaction to the man who buys because it takes fewer gallons and lasts longer. PURE—that's why.

DEVOE

The oldest manufacturing concern in the United States
Founded in New York 1754

F. W. Devoe & C. T. Reynolds Co., New York
Devoe & Reynolds Co., Chicago



—Do a Big Winter Business Making Automatic Sealing Vaults

Every Contractor can keep busy during the winter months making and selling Automatic Sealing Vaults. Vaults that seal perfectly and are absolutely air, moisture and vermin proof—concrete burial vaults. And they sell readily and at a good profit. Made with our adjustable Bessemer Steel Molds—in your own shop.

Write for further information regarding our proposition.

Automatic Sealing Vault Co.
274 East River St. Peru, Ind.



Mold
adjustable to
seven sizes

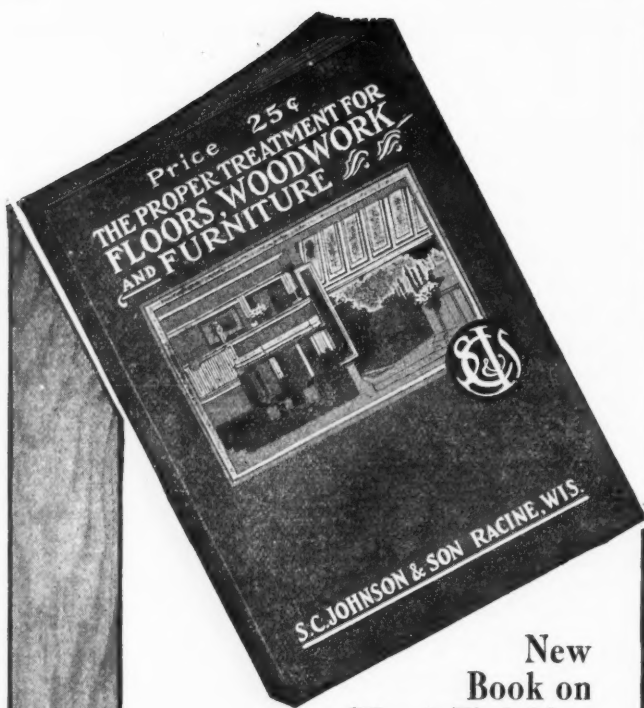


MIXED with pure linseed oil, Dutch Boy white lead makes paint thin as paper, opaque as ivory. It puts a metal mantle about the house that preserves, beautifies, lasts without cracking.

NATIONAL LEAD COMPANY

New York Boston Buffalo Chicago
Cincinnati Cleveland St. Louis San Francisco
(John T. Lewis & Bros. Co.) Philadelphia
(National Lead & Oil Co.) Pittsburgh





New Book on Wood Finishing

EVERY architect, contractor and builder is entitled to one of these new books free for the asking. It is a valuable handbook on interior finishing, beautifully illustrated in nine colors.

It tells how to finish inexpensive soft woods as beautifully as hardwoods and gives complete specifications for finishing woodwork and floors with

Johnson's Wood Dye

These dyes are not pore-filling varnish stains but coloring matter that penetrates deeply into the wood without raising the grain.

Johnson's Prepared Wax

is the most extraordinary polish for interior woodwork and floors. It gives a hard, dry, glass-like surface that does not collect dust.

If you are not familiar with Johnson's Wood Dyes and Prepared Wax we shall be glad to send you samples for experimental work or finished wood panels showing the various shades of Johnson's Wood Dye.

A.C.B.-11

Please send me free and postpaid my copy of your new 25c Instruction Book, "The Proper Treatment for Floors, Woodwork and Furniture."

Name

Address

City and State

Fill out this coupon and mail to

S. C. JOHNSON & SON

"The Wood Finishing Authorities"

RACINE

WISCONSIN

at a cost not to exceed \$2000, which was about one third of the cost that the contractors had figured on. The floors finished were of Oregon pine, and after the work had been completed it made a beautiful job.

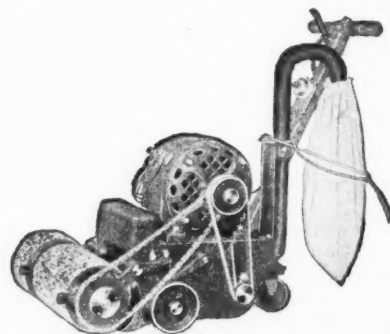
Mr. Prugh's achievement caused much comment all over the United States and a demand quickly sprang up for these machines. Application for patents were made and a company was organized to manufacture and market the new machine. The parties interested in the new company left San Francisco for the east looking for a central location for establishing their factory; and after looking over the grounds at Kansas City and St. Louis, finally decided to locate at Toledo, Ohio.

They started in a very small way, having rented a small building, but since that time have purchased a large plant and now have a large line of surfacing machines of all kinds and are the largest in this line of business.

The "Big American" which is the original machine this company built is self propelled, the operator standing on the machine, having full control of guiding it and surfacing the floors either forward or backward at the rate of 35 square feet per minute. The machine is driven with a 5-hp. electric motor which not only operates the machine but drives the sanding drums which revolve in opposite directions at a speed of 600 revolutions per minute. The suction fan picks up all the dust and dirt from the floors and stores it into a sack.

The "Big American" floor surfacing machine will surface as much flooring per day as can be accomplished by from 15 to 20 expert floor scrapers and has an earning capacity of from \$30 to \$50 per day. The cost of power will vary from \$1.00 to \$1.50 per day, and the cost of garnet paper will not exceed \$1.50 per day. The "Big American" machines are mostly for large work and practically 75 per cent of the work done in the larger cities is done with these machines.

This company also makes a smaller machine for wood



The "American Universal" Shingle Roll Wood Floor Surfer.

floors, called the "American Universal." This machine has a single sanding roll 12 inches wide, which is driven with a 1-hp. motor by means of a silent high speed chain. It is equipped with a dust collector and in fact is just as complete as the "Big American" machine, only it is not self-propelled. The machine weighs about 350 lbs. and is easily handled from one floor to another. The power for operating the "American Universal" amounts to about 40c per day and the cost of garnet paper from 75c to \$1.00.

One man with an "American Universal" can do as much floor surfacing as from five to six expert floor scrapers.

Some contractors are under the impression that before a sanding machine is used, the floor is scraped by hand; but this is a mistake, as the machine accomplishes the work from start to finish. For the rough cut a coarse grade of garnet paper is used—about a No. 2½, and for the finishing a No. 1.

With the scarcity of labor prevailing at the present time contractors have found this labor-saving device to be a wonderful help for their business, as it not only reduces greatly

(Continued to page 142.)

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



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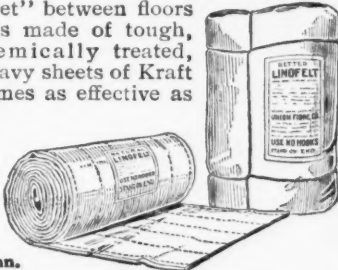
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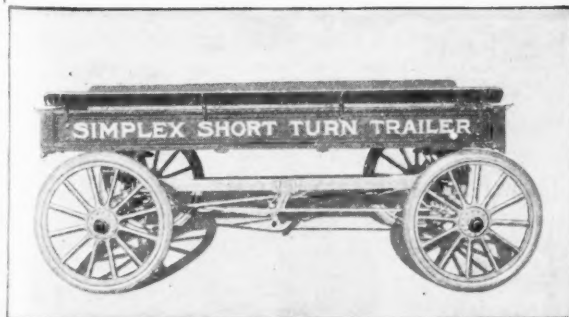
--a trailer that "trails"

Simplex Trailer

It follows the "trail" of the automobile so positively that both vehicles can turn in a twelve-foot circle. It isn't necessary, with a Simplex to take to the middle of the street to avoid bumping into curbs or swinging the trailer into everybody's way.

The Simplex is ideal for the contractor who wants to get the most out of his automobile. He can preserve the appearance of his car for pleasure; and at the same time put it to work. Any automobile that will average 20 miles will carry the Simplex along at the rate of 19 miles. Write for our catalog.

Simplex Short-Turn Trailer Co.
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Save Floor Space With a Bessler Movable Stairway

Stairway in Position for use. When not needed a panel in the ceiling is the only part visible.

The ONLY Stairway that folds up into the ceiling when not in use. The only logical method of effecting entrance into the half-story of a bungalow, or into the attic of a two-and-

a-half-story house. The Bessler Movable Stairway does not use up a single square foot of floor space in the lower room, when stairway is not in use.

Can be operated by a child.

Costs less than a stationary stairway.

Write For Our Free Book "The Modern Way Up"

It tells in an interesting way the Bessler Movable Stairway idea. The stairway and its varied uses are made perfectly clear by means of several splendid illustrations.

The Bessler Movable Stairway Company
Akron, Ohio

the cost of their floor surfacing but eliminated the delays and worry of getting capable workmen.

Full information regarding these machines can be secured from The American Floor Surfacing Machine Co., 515 South St. Clair St., Toledo, O.



Coldest Place This Side of Greenland

Those who have doubted the possibility of discarding the cumbersome array of pipes and registers in the heated air method of warming a house, and substituting a plant which consists of little more than the heater itself, must look to cases in which such a plant has given satisfaction under trying conditions in order to be convinced.

The illustration shows the outside of a building in which a pipeless furnace made by the Modern Way Furnace Company of Fort Wayne, Indiana, has been called upon to do severe service. The satisfaction which has been obtained from

its use is indicated by the following letter, written to the manufacturers after the furnace had been in constant use during the entire winter:

Houghton, Mich., March 7, 1916.

Gentlemen: In answer to your letter of Jan. 29th, I am enclosing you a photograph of the outside of our Club House, in which is installed a Modern Way Furnace. I want to say that we are having entire satisfaction with your furnace,—in fact, it is a wonder to all our members. It has been burning continuously from November last, to the present time, and is extremely economical in every respect, and heats the whole building, 2 story, 36 x 40, at 70 to 75 degrees in the coldest weather, without any trouble.

Yours respectfully,

FRED STOYLE.

This is one of the cases in which severe service has found the pipeless idea in furnace construction and installation capable of meeting extraordinary conditions in a satisfactory manner. Not everyone who uses a furnace calls upon it



"A Modern Way" Pipeless Furnace Heats this Houghton, Mich., Club House Successfully.

to perform under such conditions as are illustrated here, but there is a great deal of satisfaction in knowing that the heating equipment which is installed can, if need be, work far above its usual duty without incurring a disagreeable increase in the fuel consumption. The capability of rendering satisfactory service during the coldest weather is the most effective recommendation which any heating system can possess.



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